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Downers Grove, IL 60515
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Clayton GROUP SERVICES

July 25, 2003

Mr. Stan Komperda
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
1021 N. Grand Avenue East
Springfield, IL 62702-4072

Clayton Project 65263.04-007

RE: The Lockformer Company
711 West Ogden Avenue
Lisle, Illinois 60532

Dear Mr. Komperda:

Clayton Group Services, Inc. (Clayton) has prepared the following information package as additional information to support the development of the soil remediation objectives (SROs) for the upper fill/till silty clay, provided in Section 2.2.1 of the Remedial Action Plan Areas 1 and 2 (*July 2003 Plan*). The information has been prepared on behalf of the Lockformer Company upon the request of the Parson, Inc., oversight consultant for the Illinois EPA.

As presented in Section 2.2.1.2 of the *July 2003 Plan*, SROs were developed for the "Soil Component of the Groundwater Ingestion Route" utilizing "Taco Plus!" software as developed by ATR Associates of Arlington, Virginia. This program was developed to aid in the evaluation of soil and groundwater cleanup levels according to 35 IAC Part 742.

Taco Plus! is capable of providing an array of datasheets to support its various calculations. With respect to the SRO evaluation presented in Section 2.2.1 of the *July 2003 Plan*, datasheets RBCA-V and RBCA-Rf provide the information used to calculate groundwater source (GW_{source}) concentrations and datasheets RBCA-XI and RBCA-XIII provide the information used to calculate Leaching Factor (LF_{sw}) values. SROs were manually calculated using equation R12 in 35 IAC 742, Appendix C, Table C: RBCA Equations (no datasheets provided). In the instance that the calculated GW_{source} concentration exceeded the solubility limit of the chemical in water (S) or the SRO exceeded the soil saturation limit (C_{sat}), Taco Plus! utilized default value equal to the calculated site-specific S and C_{sat} concentrations for each chemical. The S and C_{sat} values are provided in datasheets C and E, respectively.
As part of the SRO determination presented in Section 2.2.1 of the *July 2003 Plan*, an evaluation was conducted on each individual zone of impact for each contaminant of concern (COC) (cis-1,2-dichloroethene, trans-1,2-dichloroethene, trichloroethene, tetrachlorethene, 1,1,1-trichloroethane, vinyl chloride, and toluene). The TACO Plus! datasheets containing the support information for each evaluation is presented in Attachments A through F. Each attachment contains the package of datasheets for a specific COC, with the exception of cis-

1,2-dichloroethene and trans-1,2-dichloroethene, which were evaluated together due to cumulative effects. Each attachment is further subdivided into the applicable zones of impact (the former fill pipe area, the former vapor degreaser area, and the eastern portion of Area 2).

It is important to note that multiple calculations were required to evaluate the differing lithologies existing at the site (refer to Figure 2.2-9 of the *July 2003 Plan*). Since the soil contamination under evaluation was located in the upper fill/till silty clay, and the aquifer conditions occurred in the underlying mass waste sand and gravel soil, conditions specific to the upper fill/till silty clay were evaluated during the soil calculations, while soil conditions specific to the mass waste sand and gravel were evaluated during the groundwater migration calculations. This resulted in non-applicable being reported in certain datasheets. For example, datasheet RBCA-V provides the information (incorporating soil conditions specific to the mass waste sand and gravel) for the calculation of GW_{source} concentrations. However, TACO Plus! additionally calculates LF_{sw} and SRO values (given the mass waste sand and gravel parameters) and includes these values on datasheet RBCA-V. These values should be disregarded because the appropriate upper fill/till silty clay soil conditions were not considered. (The correct LF_{sw} values are presented on datasheet RBCA-XIII.) Therefore, it is critical to use the datasheets only for the information for which they are provided (detailed above).

Figures 1 through 6 illustrate the contaminant geometry and migration distances used in the GW_{source} calculations. Groundwater flow directions were based on the mass waste unit groundwater level data collected on November 8, 2002. Table 1 provides the individual LF_{sw} values, GW_{source} concentrations, and calculated SROs (using equation R14).

Should you have any questions, do not hesitate to contact the undersigned at 630.795.3206.

Sincerely,

William S. Elwell, P.G.
Senior Project Manager
Environmental Services

cc: Mr. Sasa Jazic, Parsons Inc.
Mr. Om Patel, Weston Solutions
Mr. Howard O. Chinn, Attorney General's Office
Mr. Arthur Bourlard, The Lockformer Company
Mr. Rick Saines, Baker & McKenzie
Mr. Jim Olsen, Tighe & Bond
Mr. Steve Faryan, U.S. EPA

15-65263ca241

Figures
Tables

Attachment A cis-1,2-Dichloroethene and trans-1,2-Dichloroethene Information
Leaching Factor Datasheets
GW_{source} Datasheets – Former Fill Pipe Area
GW_{source} Datasheets – Area 2
GW_{source} Datasheets – Former Vapor Degreaser Area

Attachment B Tetrachloroethene Information
Leaching Factor Datasheets
GW_{source} Datasheets – Former Fill Pipe Area
GW_{source} Datasheets – Area 2
GW_{source} Datasheets – Former Vapor Degreaser Area

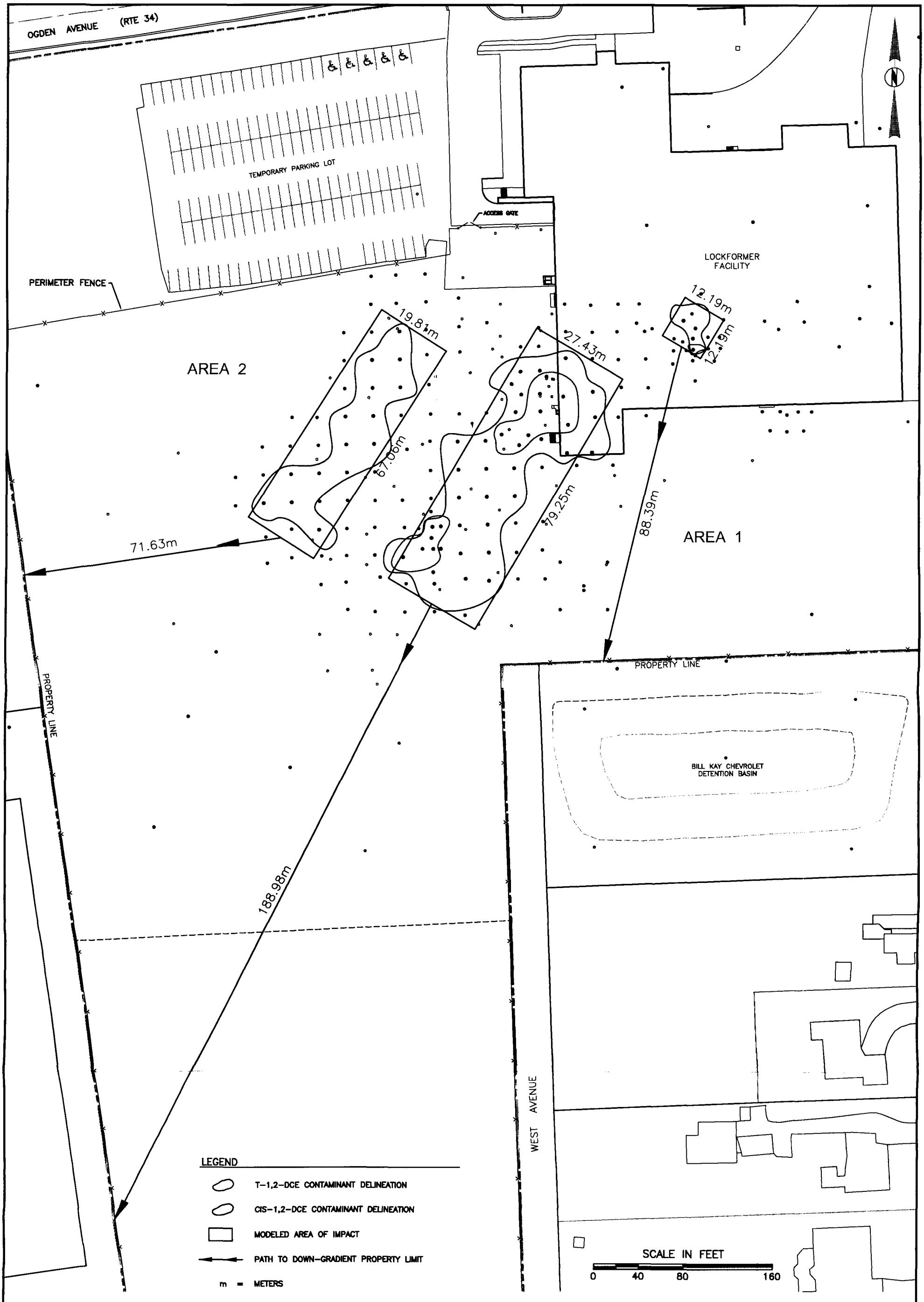
Attachment C Trichloroethene Information
Leaching Factor Datasheets
GW_{source} Datasheets – Former Fill Pipe Area
GW_{source} Datasheets – Area 2
GW_{source} Datasheets – Former Vapor Degreaser Area

Attachment D 1,1,1-Trichloroethane Information
Leaching Factor Datasheets
GW_{source} Datasheets – Northeast Portion of Former Fill Pipe Area
GW_{source} Datasheets – Southwest Portion of Former Fill Pipe Area

Attachment E Vinyl Chloride
Leaching Factor Datasheets
GW_{source} Datasheets – Former Fill Pipe Area
GW_{source} Datasheets – Area 2
GW_{source} Datasheets – Former Vapor Degreaser Area

Attachment F Toluene Information
Leaching Factor Datasheets
GW_{source} Datasheets – Former Fill Pipe Area

FIGURES

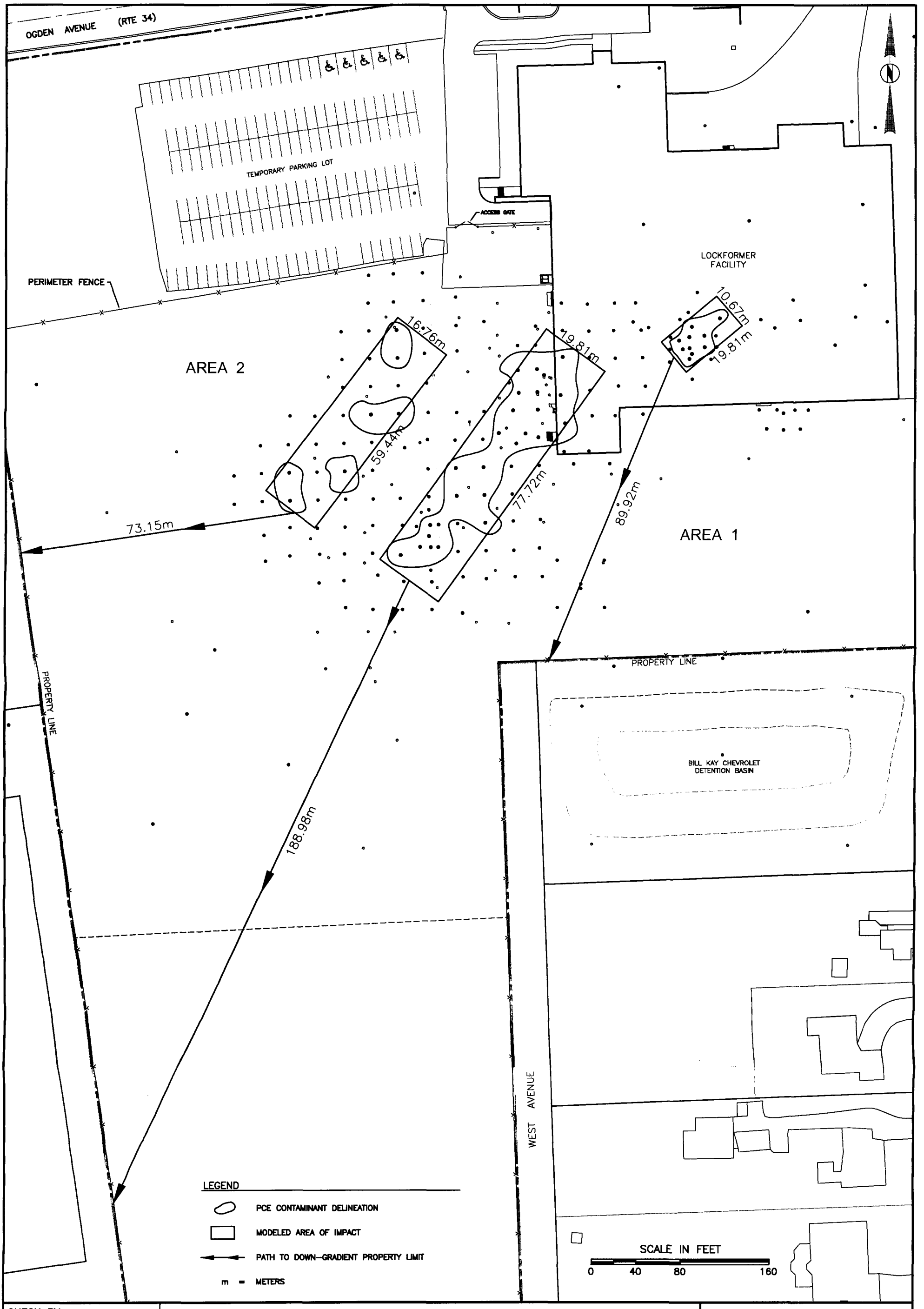


CHECK BY	
DRAWN BY	BCP
DATE	7-23-03
SCALE	AS SHOWN
CAD NO.	6526316Z
PRJ NO.	65263.16

CONTAMINANT TRANSPORT MODEL
CIS-1,2-DICHLOROETHENE (CIS-1,2-DCE) & TRANS-1,2-DICHLOROETHENE(T-1,2,-DCE)
AREAS 1 & 2
THE LOCKFORMER COMPANY
711 W. OGDEN AVENUE
LISLE, ILLINOIS

Clayton® GROUP SERVICES

FIGURE 1



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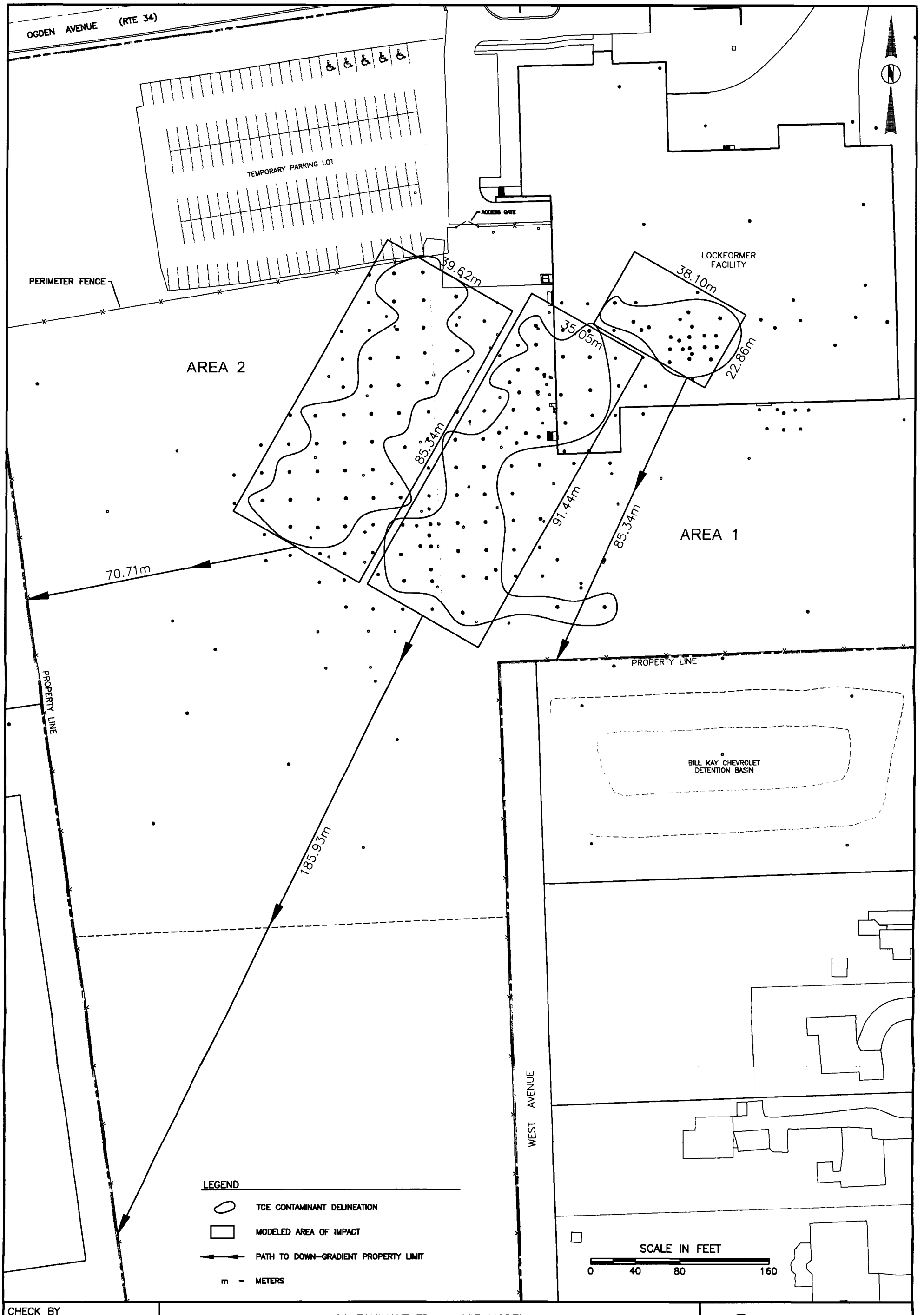
DRAWN BY	BCP
DATE	7-23-03
SCALE	AS SHOWN
CAD NO.	6526316Z
PRJ NO.	65263.16

CONTAMINANT TRANSPORT MODEL
TETRACHLOROETHANE (PCE)
AREAS 1 & 2
THE LOCKFORMER COMPANY
711 W. OGDEN AVENUE
LISLE, ILLINOIS

Clayton® GROUP SERVICES

FIGURE 2



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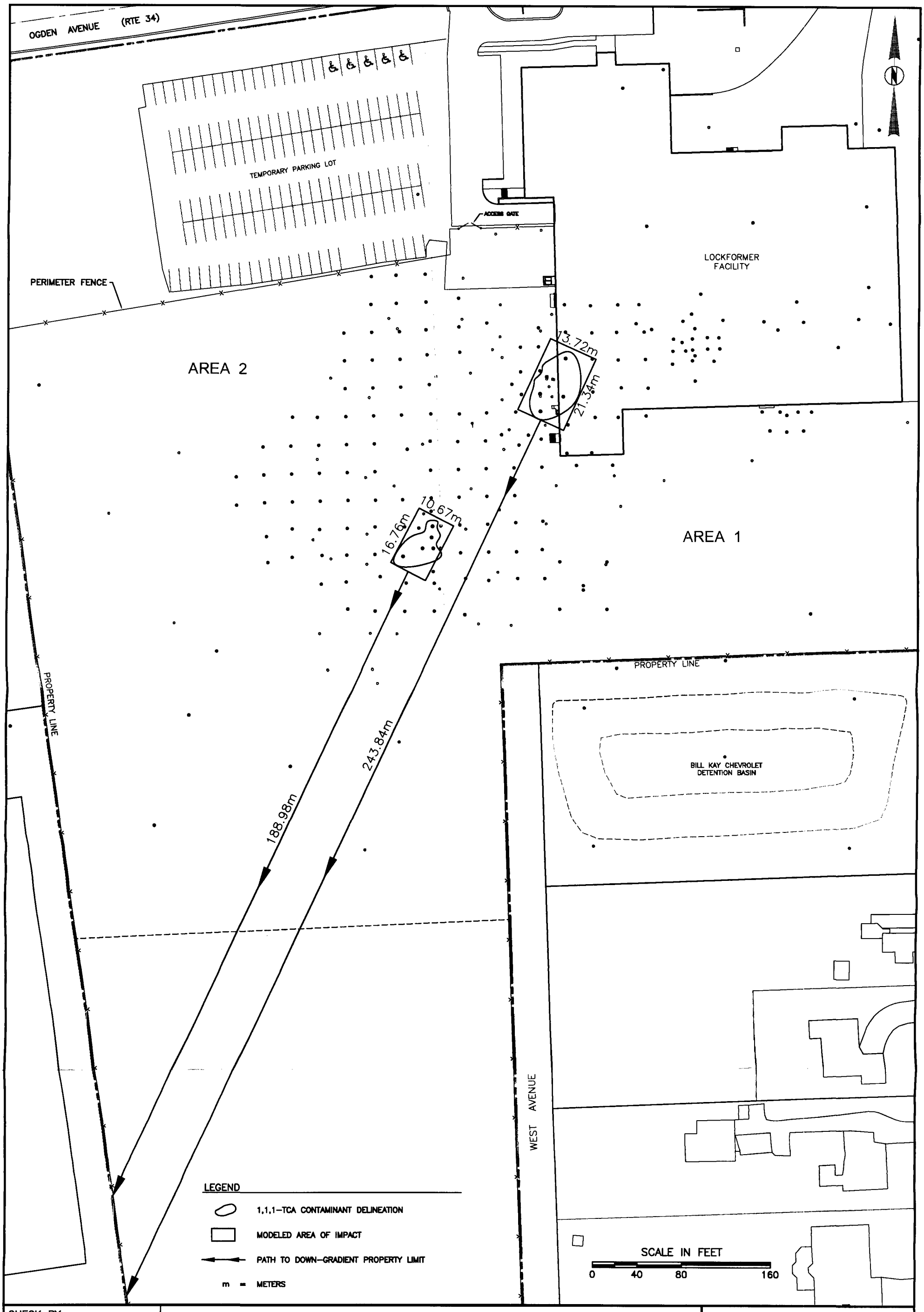
DATE	7-23-03
SCALE	AS SHOWN
CAD NO.	6526316Z
PRJ NO.	65263.16

CONTAMINANT TRANSPORT MODEL
TRICHLOROETHANE (TCE)
AREAS 1 & 2
THE LOCKFORMER COMPANY
711 W. OGDEN AVENUE
LISLE, ILLINOIS

Clayton GROUP SERVICES

FIGURE 3



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DATE	7–23–03
SCALE	AS SHOWN
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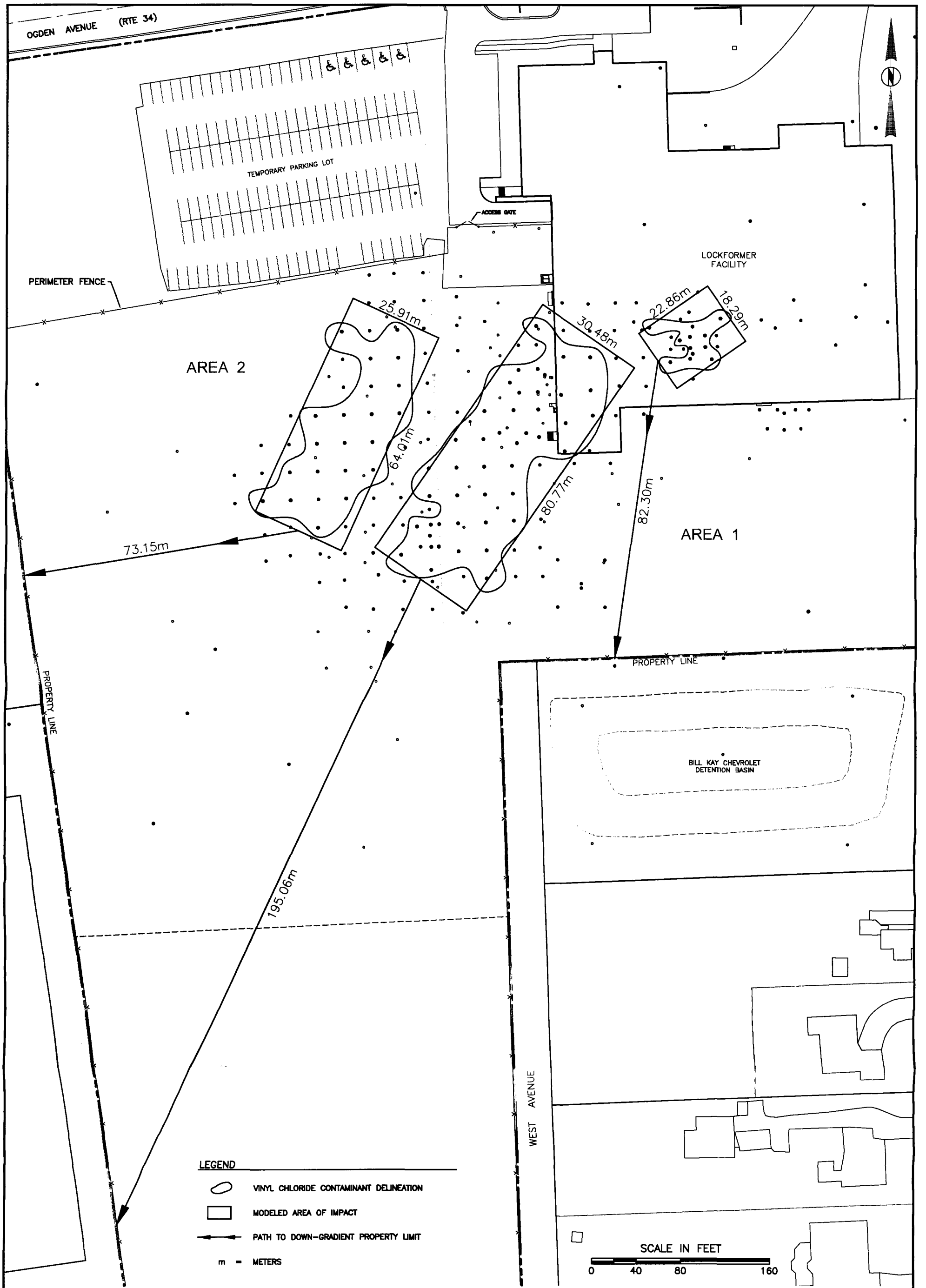
PRJ NO.	65263.16

CONTAMINANT TRANSPORT MODEL
1,1,1–TRICHLOROETHANE (1,1,1–TCA)
AREAS 1 & 2
THE LOCKFORMER COMPANY
711 W. OGDEN AVENUE
LISLE, ILLINOIS

Clayton® GROUP SERVICES

FIGURE 4



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DATE	7-23-03
SCALE	AS SHOWN
CAD NO.	6526316Z
PRJ NO.	65263.16

CONTAMINANT TRANSPORT MODEL
VINYL CHLORIDE (VC)
AREAS 1 & 2
THE LOCKFORMER COMPANY
711 W. OGDEN AVENUE
LISLE, ILLINOIS

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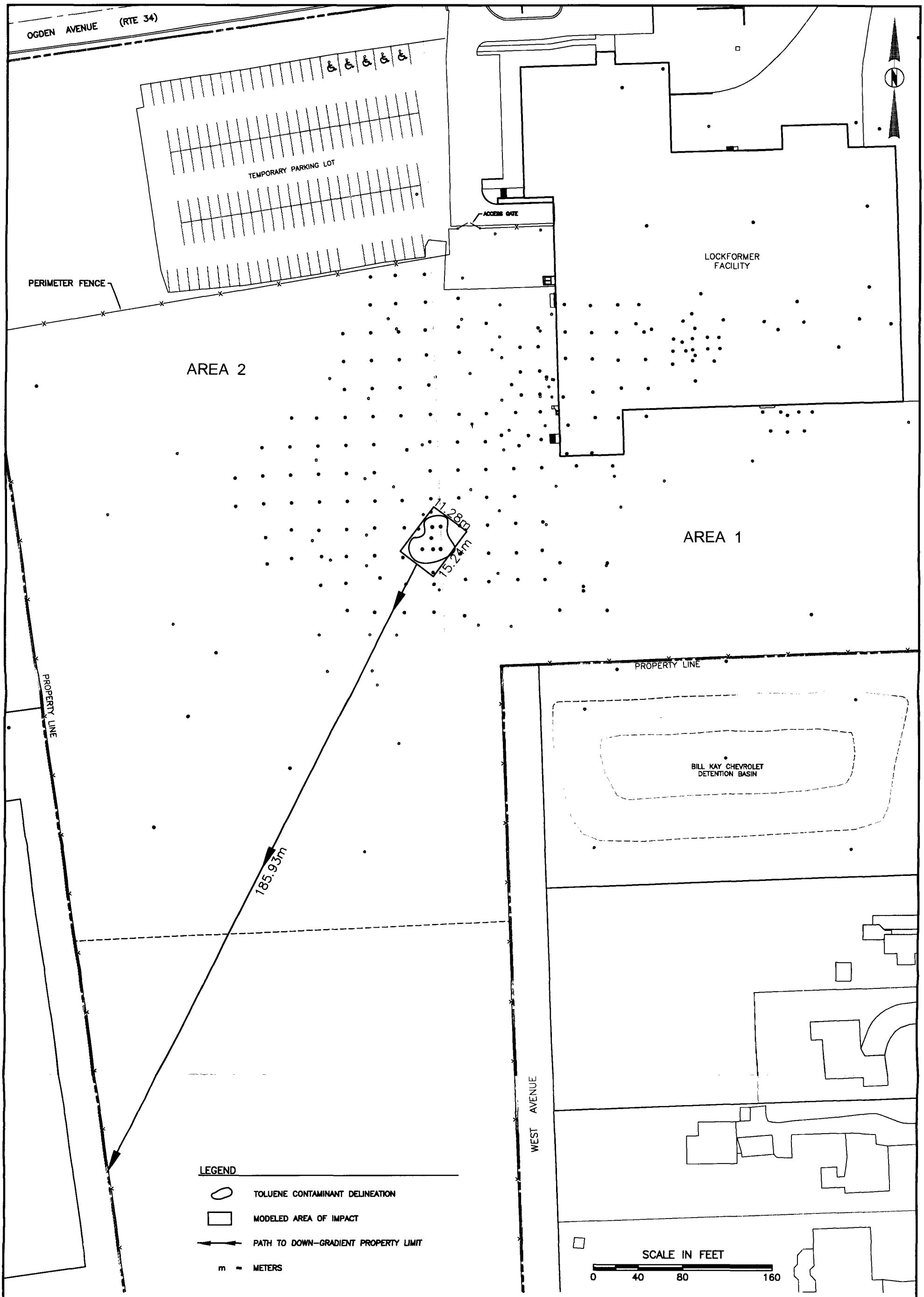
FIGURE 5



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DRAWN BY	BCP
DATE	7-23-03
SCALE	AS SHOWN
CAD NO.	6526316Z
PRJ NO.	65263.16

CONTAMINANT TRANSPORT MODEL
TOLUENE
AREAS 1 & 2
THE LOCKFORMER COMPANY
711 W. OGDEN AVENUE
LISLE, ILLINOIS

Clayton® GROUP SERVICES

FIGURE 6

TABLES

TABLE 1
Soil Remediation Objective Table
Upper Till/Fill in Areas 1 and 2

The Lockformer Company / Lisle, Illinois

Compound of Concern	Leaching Factor (LF_{sw}) ($^{mg/l}/_{mg/kg}$)	GW_{source} (mg/L)	[a]Calculated SRO (mg/kg) (GW_{source}/LF_{sw})
cis-1,2-Dichloroethene	0.11		
Former Fill Pipe Area		19.4	176.364
Area 2		1.13	10.273
Former Vapor Degreaser Area		3.07	27.909
trans-1,2-Dichloroethene	0.0864		
Former Fill Pipe Area		60.3	697.917
Former Vapor Degreaser Area		6.98	80.787
Tetrachloroethene	0.0384		
Former Fill Pipe Area		[b]200	[c]260
Area 2		[b]200	[c]260
Former Vapor Degreaser Area		[b]200	[c]260
Trichloroethene	0.0364		
Former Fill Pipe Area		[b]1100	[c]1510
Area 2		13	357
Former Vapor Degreaser Area		43.6	1,197
1,1,1-Trichloroethane	0.0507		
Former Fill Pipe Area (NE)		[b]1330	[c]1310
Former Fill Pipe Area (SW)		[b]1330	[c]1310
Vinyl Chloride	0.142		
Former Fill Pipe Area		0.201	1.415
Area 2		0.0156	0.11
Former Vapor Degreaser Area		0.0277	0.195
Toluene	0.0337		
Former Fill Pipe Area		[b]526	[c]780

NOTES:

[a] Using 35 IAC 742, Appendix C, Table C: Equation R12.

[b] Default value equal to the compound specific solubility limit.

[c] Default value equal to the compound specific soil saturation limit.

SRO = Soil Remediation Objective (soil component of the groundwater ingestion route)

GW_{source} = Groundwater Concentration at the Source

ATTACHMENT A

CIS-1,2-DICHLOROETHENE AND TRANS-1,2-DICHLOROETHENE INFORMATION

Clayton GROUP SERVICES

CIS-1,2-DCE AND TRANS-1,2-DCE

LEACHING FACTOR DATASHEETS

15-65263ca241

Datasheet RBCA-XIII. LFsw

Datasheet RBCA-XIII is to be used to propose the leaching factor calculated by the equation in Appendix C, Table C of TACO: Equation R14 (residential, industrial/commercial and constructin worker scenarios). The use of Equations R20 and R24 in TACO are necessary to generate some of the input values for Equation R14. Since the values in Datasheet RBCA-XI are used in this evaluation, this Datasheet must also be submitted.

ks (gwater/gsoil)*	See below	ρs (g/cm³)**	1.72
H' (unitless)***	See below	θws (unitless)**	0.35
Ugw (cm/yr)****	229.90	θas (unitless)**	0.03
K (cm/yr)	76,632.00		
i (unitless)	0.003		
δgw (cm)	200		
I (cm/yr)	7		
W (cm)	7.925		

* ks value reported on Datasheet RBCA-XI ** Physical Soil Properties (see Datasheet B)
Chemical Properties (see Datasheet C) * Ugw value as calculated using Equation R24

Chemical Name	ks (gwater/gsoil)	H' (unitless)	LFsw (mg/Lwater)/(mg/kgsoil)
Dichloroethylene, cis-1,2-	0.2485	1.67E-001	1.10E-01
Dichloroethylene, trans-1,2-	0.3675	3.85E-001	8.64E-02

Datasheet RBCA-XI. ks

Datasheet RBCA-XI is to be used to propose the soil water sorption coefficient (ks) calculated by the equation in Appendix C, Table C of TACO: Equation R20 (residential, industrial/commercial and construction worker scenarios).

Land Use Scenario: **Residential, Industrial/Commercial and Construction Worker**

Chemical Name	Surface Soils				Subsurface Soils			
	pH	Koc* (cm³/g)	foc** (g/g)	ks (g/g$_{soil}$)/(g/cm³$_{water}$)	pH	Koc* (cm³/g)	foc** (g/g)	ks (g/g$_{soil}$)/(g/cm³$_{water}$)
Dichloroethylene, cis-1,2-	0.00	3.55E+001	0.000	0.21300	6.80	3.55E+001	0.007	0.24850
Dichloroethylene, trans-1,2-	0.00	5.25E+001	0.000	0.31500	6.80	5.25E+001	0.007	0.36750

* Chemical Properties (see Datasheet C)
** Physical Soil Parameters (see Datasheet B)

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CIS-1,2-DCE AND TRANS-1,2-DCE

GW_{source} DATASHEETS
FORMER FILL PIPE AREA

15-65263ca241

Datasheet RBCA-V. Migration to Ground Water - Class 1

Datasheet RBCA-V is to be used to propose soil cleanup objectives for the migration to ground water exposure route calculated by the equation in Appendix C, Table C of TACO: Equation R12 (residential, industrial/commercial and construction worker scenarios). Equations described under RBCA-VI and RBCA-VIII as well as the equations in 35 Ill. Adm. Code 620, Subpart F may also be required to generate some of the input values for equation R12. Note; use 35 Ill. Code 620, Subpart F to calculate cleanup objectives for noncarcinogens. Since values listed in RBCA-XIII are used in this evaluation, this datasheet must be submitted. In cases where the target cancer risk (TR) exceeds 1 in 1,000,000, Datasheet -VI must also be submitted.

Land Use Scenario: **ALL**

Institutional Control YES NO

Engineered Barrier YES NO

GWsource (mg/L)	See below	X (cm)	18,898.00
LFsw [(mg/L)/(mg/kg)]*	See below	αx (cm)	1,890
GWcomp (mg/L)**	See below	αy (cm)	630
C(x)/Csource (unitless)***	See below	αz (cm)	94
U (cm/d)	1.6600	Sw (cm)	2,743
K (cm/d)	209.951	λ (1/d)****	See below
i (cm/cm	0.0030	Sd (cm)	200
θT (cm³/cm³-soil)*****	0.38		

* LFsw reported on Datasheet RBCA-XIII

** GWcomp reported on Datasheet RBCA-VI

*** C(x)/Csource reported on Datsheet RBCA-VI

**** Chemical Parameters (see Datasheet C)

***** Physical Soil Parameters (see Datasheet B)

Chemical Name	GWsource (mg/L)	LFsw (mg/L)/(mg/kg)	GWcomp (mg/L)	C(x)/Csource (unitless)	λ (1/day)	Soil Cleanup Objective (mg/kg)
Dichloroethylene, cis-1,2-	19.4262	6.46E-01	0.07	3.60E-03	0.000240	30.088
Dichloroethylene, trans-1,	60.3052	5.09E-01	0.1	1.66E-03	0.000240	118.438

Datasheet RBCA-VII. Concentration of Contaminant in Groundwater Source

Datasheet RBCA-VII is to be used to predict the groundwater concentration at a specified distance from the source as calculated by the equation in Appendix C of TACO: Equation R26 (residential, industrial/ commercial and construction worker scenarios). Since values listed in Datasheet RBCA-V are used in this evaluation, this datasheet must also be submitted.

Csource (mg/L)	See below	αy (cm)	630
X (cm)	18,898.00	Sd (cm)	200
αx (cm)*	1,890	αz (cm)	94
λ (1/day)***	See below	K (cm/d)	209.95
U (cm/d)*	1.66	i (unitless)	0.003
Sw (cm)	2,743	θT (unitless)**	0.38

* αx, αy, αz, and U are reported on Datasheet RBCA-V ** Physical Soil Parameter (see Datasheet B)
*** Chemical Properties (see Datasheet C)

Chemical Name	λ (1/day)	Csource* (mg/L)	C(x) (mg/L)
Dichloroethylene, cis-1,2-	0.0002400		
Dichloroethylene, trans-1,2-	0.0002400		

* Note: Csource is the measured concentration at the source for this form.

Datasheet Rf - RBCA Retardation Factors

Datasheet Rf - RBCARetardation Factors presents the information used to calculate the retardation factors used in RBCA Equations R15 and R26. The Retardation Factors are used to modify the Specific Discharge to better represent the rate at which the contaminant moves through the saturated zone. For further information see: Domenico, P.A. and F. W. Schwartz. "Physical and Chemical Hydrogeology". 2nd Edition. John Wiley & Sons. New York. pg. 377.

ks (gwater/gsoil)*	See below	ρs (g/cm‡)**	1.72
Koc (gwater/gsoil)*	See below	foc (unitless)**	0.007
η Total Porosity**	0.38		

* ks value reported on Datasheet RBCA-XI ** Physical Soil Properties (see Datasheet B)
***Chemical Properties (see Datasheet C)

Chemical Name	Koc - Subsurface (gwater/gsoil)	ks (gwater/gsoil)	Rf (mg/Lwater)/(mg/kgsoil)
Dichloroethylene, cis-1,2-	35.50	0.2485	2.13
Dichloroethylene, trans-1,2-	52.50	0.3675	2.67

Clayton GROUP SERVICES

CIS-1,2-DCE

GW_{source} DATASHEETS
AREA 2

Datasheet RBCA-V. Migration to Ground Water - Class 1

Datasheet RBCA-V is to be used to propose soil cleanup objectives for the migration to ground water exposure route calculated by the equation in Appendix C, Table C of TACO: Equation R12 (residential, industrial/commercial and construction worker scenarios). Equations described under RBCA-VI and RBCA-VIII as well as the equations in 35 Ill. Adm. Code 620, Subpart F may also be required to generate some of the input values for equation R12. Note; use 35 Ill. Code 620, Subpart F to calculate cleanup objectives for noncarcinogens. Since values listed in RBCA-XIII are used in this evaluation, this datasheet must be submitted. In cases where the target cancer risk (TR) exceeds 1 in 1,000,000, Datasheet -VI must also be submitted.

Land Use Scenario: **ALL**

Institutional Control YES NO

Engineered Barrier YES NO

GWsource (mg/L)	See below	X (cm)	7,163.00
LFsw [(mg/L)/(mg/kg)]*	See below	αx (cm)	716
GWcomp (mg/L)**	See below	αy (cm)	239
C(x)/Csource (unitless)***	See below	αz (cm)	36
U (cm/d)	2.2500	Sw (cm)	1,981
K (cm/d)	209.951	λ (1/d)****	See below
i (cm/cm	0.0030	Sd (cm)	200
θT (cm³/cm³-soil)*****	0.28		

* LFsw reported on Datasheet RBCA-XIII ** GWcomp reported on Datasheet RBCA-VI

*** C(x)/Csource reported on Datsheet RBCA-VI **** Chemical Parameters (see Datasheet C)

***** Physical Soil Parameters (see Datasheet B)

Chemical Name	GWsource (mg/L)	LFsw (mg/L)/(mg/kg)	GWcomp (mg/L)	C(x)/Csource (unitless)	λ (1/day)	Soil Cleanup Objective (mg/kg)
Dichloroethylene, cis-1,2-	1.1276	6.35E-01	0.07	6.21E-02	0.000240	1.775

Datasheet RBCA-VII. Concentration of Contaminant in Groundwater Source

Datasheet RBCA-VII is to be used to predict the groundwater concentration at a specified distance from the source as calculated by the equation in Appendix C of TACO: Equation R26 (residential, industrial/ commercial and construction worker scenarios). Since values listed in Datasheet RBCA-V are used in this evaluation, this datasheet must also be submitted.

Csource (mg/L)	See below	αy (cm)	239
X (cm)	7,163.00	Sd (cm)	200
αx (cm)*	716	αz (cm)	36
λ (1/day)***	See below	K (cm/d)	209.95
U (cm/d)*	2.25	i (unitless)	0.003
Sw (cm)	1,981	θT (unitless)**	0.28

* αx, αy, αz, and U are reported on Datasheet RBCA-V ** Physical Soil Parameter (see Datasheet B)
*** Chemical Properties (see Datasheet C)

Chemical Name	λ (1/day)	Csource* (mg/L)	C(x) (mg/L)
Dichloroethylene, cis-1,2-	0.0002400		

* Note: Csource is the measured concentration at the source for this form.

Datasheet Rf - RBCA Retardation Factors

Datasheet Rf - RBCARetardation Factors presents the information used to calculate the retardation factors used in RBCA Equations R15 and R26. The Retardation Factors are used to modify the Specific Discharge to better represent the rate at which the contaminant moves through the saturated zone. For further information see: Domenico, P.A. and F. W. Schwartz. "Physical and Chemical Hydrogeology". 2nd Edition. John Wiley & Sons. New York. pg. 377.

ks (gwater/gsoil)*	See below	ρs (g/cm‡)**	1.90
Koc (gwater/gsoil)*	See below	foc (unitless)**	0.008
η Total Porosity**	0.28		

* ks value reported on Datasheet RBCA-XI ** Physical Soil Properties (see Datasheet B)
***Chemical Properties (see Datasheet C)

Chemical Name	Koc - Subsurface (gwater/gsoil)	ks (gwater/gsoil)	Rf (mg/Lwater)/(mg/kgsoil)
Dichloroethylene, cis-1,2-	35.50	0.2840	2.93

Clayton GROUP SERVICES

CIS-1,2-DCE AND TRANS-1,2-DCE

GW_{source} DATASHEETS
FORMER VAPOR DEGREASER AREA

15-65263ca241

Datasheet RBCA-V. Migration to Ground Water - Class 1

Datasheet RBCA-V is to be used to propose soil cleanup objectives for the migration to ground water exposure route calculated by the equation in Appendix C, Table C of TACO: Equation R12 (residential, industrial/commercial and construction worker scenarios). Equations described under RBCA-VI and RBCA-VIII as well as the equations in 35 Ill. Adm. Code 620, Subpart F may also be required to generate some of the input values for equation R12. Note; use 35 Ill. Code 620, Subpart F to calculate cleanup objectives for noncarcinogens. Since values listed in RBCA-XIII are used in this evaluation, this datasheet must be submitted. In cases where the target cancer risk (TR) exceeds 1 in 1,000,000, Datasheet -VI must also be submitted.

Land Use Scenario: **ALL**

Institutional Control YES NO

Engineered Barrier YES NO

GWsource (mg/L)	See below	X (cm)	8,839.00
LFsw [(mg/L)/(mg/kg)]*	See below	αx (cm)	884
GWcomp (mg/L)**	See below	αy (cm)	295
C(x)/Csource (unitless)***	See below	αz (cm)	44
U (cm/d)	1.6600	Sw (cm)	1,219
K (cm/d)	209.951	λ (1/d)****	See below
i (cm/cm	0.0030	Sd (cm)	200
θT (cml/cml-soil)*****	0.38		

* LFsw reported on Datasheet RBCA-XIII ** GWcomp reported on Datasheet RBCA-VI

*** C(x)/Csource reported on Datsheet RBCA-VI **** Chemical Parameters (see Datasheet C)

***** Physical Soil Parameters (see Datasheet B)

Chemical Name	GWsource (mg/L)	LFsw (mg/L)/(mg/kg)	GWcomp (mg/L)	C(x)/Csource (unitless)	λ (1/day)	Soil Cleanup Objective (mg/kg)
Dichloroethylene, cis-1,2-	3.0740	3.43E-01	0.07	2.28E-02	0.000240	8.960
Dichloroethylene, trans-1,	6.9760	2.71E-01	0.1	1.43E-02	0.000240	25.784

Datasheet RBCA-VII. Concentration of Contaminant in Groundwater Source

Datasheet RBCA-VII is to be used to predict the groundwater concentration at a specified distance from the source as calculated by the equation in Appendix C of TACO: Equation R26 (residential, industrial/ commercial and construction worker scenarios). Since values listed in Datasheet RBCA-V are used in this evaluation, this datasheet must also be submitted.

Csource (mg/L)	See below	αy (cm)	295
X (cm)	8,839.00	Sd (cm)	200
αx (cm)*	884	αz (cm)	44
λ (1/day)***	See below	K (cm/d)	209.95
U (cm/d)*	1.66	i (unitless)	0.003
Sw (cm)	1,219	θT (unitless)**	0.38

* αx, αy, αz, and U are reported on Datasheet RBCA-V ** Physical Soil Parameter (see Datasheet B)
*** Chemical Properties (see Datasheet C)

Chemical Name	λ (1/day)	Csource* (mg/L)	C(x) (mg/L)
Dichloroethylene, cis-1,2-	0.0002400		
Dichloroethylene, trans-1,2-	0.0002400		

* Note: Csource is the measured concentration at the source for this form.

Datasheet Rf - RBCA Retardation Factors

Datasheet Rf - RBCARetardation Factors presents the information used to calculate the retardation factors used in RBCA Equations R15 and R26. The Retardation Factors are used to modify the Specific Discharge to better represent the rate at which the contaminant moves through the saturated zone. For further information see: Domenico, P.A. and F. W. Schwartz. "Physical and Chemical Hydrogeology". 2nd Edition. John Wiley & Sons. New York. pg. 377.

ks (gwater/gsoil)*	See below	ρs (g/cm³)**	1.72
Koc (gwater/gsoil)*	See below	foc (unitless)**	0.007
n Total Porosity**	0.38		

* ks value reported on Datasheet RBCA-XI ** Physical Soil Properties (see Datasheet B)
***Chemical Properties (see Datasheet C)

Chemical Name	Koc - Subsurface (gwater/gsoil)	ks (gwater/gsoil)	Rf (mg/Lwater)/(mg/kgsoil)
Dichloroethylene, cis-1,2-	35.50	0.2485	2.13
Dichloroethylene, trans-1,2-	52.50	0.3675	2.67

Clayton GROUP SERVICES

ATTACHMENT B

TETRACHLOROETHENE INFORMATION

TETRACHLOROETHENE

LEACHING FACTOR DATASHEETS

Datasheet RBCA-XIII. LFsw

Datasheet RBCA-XIII is to be used to propose the leaching factor calculated by the equation in Appendix C, Table C of TACO: Equation R14 (residential, industrial/commercial and constructin worker scenarios). The use of Equations R20 and R24 in TACO are necessary to generate some of the input values for Equation R14. Since the values in Datasheet RBCA-XI are used in this evaluation, this Datasheet must also be submitted.

ks (gwater/gsoil)*	See below	ρs (g/cm³)**	1.72
H' (unitless)***	See below	θws (unitless)**	0.35
Ugw (cm/yr)****	229.90	θas (unitless)**	0.03
K (cm/yr)	76,632.00		
i (unitless)	0.003		
δgw (cm)	200		
I (cm/yr)	7		
W (cm)	7.772		

* ks value reported on Datasheet RBCA-XI ** Physical Soil Properties (see Datasheet B)
Chemical Properties (see Datasheet C) * Ugw value as calculated using Equation R24

Chemical Name	ks (gwater/gsoil)	H' (unitless)	LFsw (mg/Lwater)/(mg/kgsoil)
Tetrachloroethylene	1.0850	7.54E-001	3.84E-02

Datasheet RBCA-XI. ks

Datasheet RBCA-XI is to be used to propose the soil water sorption coefficient (ks) calculated by the equation in Appendix C, Table C of TACO: Equation R20 (residential, industrial/commercial and construction worker scenarios).

Land Use Scenario: **Residential, Industrial/Commercial and Construction Worker**

Chemical Name	Surface Soils				Subsurface Soils			
	pH	Koc* (cm³/g)	foc** (g/g)	ks (g/g$_{soil}$)/(g/cm³$_{water}$)	pH	Koc* (cm³/g)	foc** (g/g)	ks (g/g$_{soil}$)/(g/cm³$_{water}$)
Tetrachloroethylene	6.80	1.55E+002	0.006	0.93000	6.80	1.55E+002	0.007	1.08500

* Chemical Properties (see Datasheet C)

** Physical Soil Parameters (see Datasheet B)

Datasheet E: Soil Saturation Limits

Chemical	Constituent Properties					Saturation Limits	
	Solubility mg/L	Kd (Surface) cm³/g	Kd (Subsurface) cm³/g	Henry's Law Constant (H') (dimensionless)	Organic Carbon Partition Coefficient (Koc)	Csat (Surface Soils) mg/kg	Csat (Subsurface Soils) mg/kg
Tetrachloroethylene	2.00E+002	0.930	1.085	7.54E-001	1.55E+002	234.15	260.33

Clayton GROUP SERVICES

TETRACHLOROETHENE

GW_{source} DATASHEETS
FORMER FILL PIPE AREA

15-65263ca241

Datasheet RBCA-V. Migration to Ground Water - Class 1

Datasheet RBCA-V is to be used to propose soil cleanup objectives for the migration to ground water exposure route calculated by the equation in Appendix C, Table C of TACO: Equation R12 (residential, industrial/commercial and construction worker scenarios). Equations described under RBCA-VI and RBCA-VIII as well as the equations in 35 Ill. Adm. Code 620, Subpart F may also be required to generate some of the input values for equation R12. Note; use 35 Ill. Code 620, Subpart F to calculate cleanup objectives for noncarcinogens. Since values listed in RBCA-XIII are used in this evaluation, this datasheet must be submitted. In cases where the target cancer risk (TR) exceeds 1 in 1,000,000, Datasheet -VI must also be submitted.

Land Use Scenario: **ALL**

Institutional Control YES NO

Engineered Barrier YES NO

GW_{source} (mg/L)	See below	X (cm)	18,898.00
LF_{sw} [(mg/L)/(mg/kg)]*	See below	α_x (cm)	1,890
GW_{comp} (mg/L)**	See below	α_y (cm)	630
$C(x)/C_{source}$ (unitless)***	See below	α_z (cm)	94
U (cm/d)	2.2500	S_w (cm)	1,981
K (cm/d)	209.951	λ (1/d)****	See below
i (cm/cm	0.0030	S_d (cm)	200
θ_T (cm³/cm³-soil)*****	0.28		

* LFsw reported on Datasheet RBCA-XIII ** GWcomp reported on Datasheet RBCA-VI

*** C(x)/Csource reported on Datsheet RBCA-VI **** Chemical Parameters (see Datasheet C)

***** Physical Soil Parameters (see Datasheet B)

Chemical Name	GW_{source} (mg/L)	LF_{sw} (mg/L)/(mg/kg)	GW_{comp} (mg/L)	$C(x)/C_{source}$ (unitless)	λ (1/day)	Soil Cleanup Objective (mg/kg)
Tetrachloroethylene	200.000	1.69E-01	0.005	1.65E-11	0.000960	273.538

Datasheet RBCA-VII. Concentration of Contaminant in Groundwater Source

Datasheet RBCA-VII is to be used to predict the groundwater concentration at a specified distance from the source as calculated by the equation in Appendix C of TACO: Equation R26 (residential, industrial/ commercial and construction worker scenarios). Since values listed in Datasheet RBCA-V are used in this evaluation, this datasheet must also be submitted.

Csource (mg/L)	See below	αy (cm)	630
X (cm)	18,898.00	Sd (cm)	200
αx (cm)*	1,890	αz (cm)	94
λ (1/day)***	See below	K (cm/d)	209.95
U (cm/d)*	2.25	i (unitless)	0.003
Sw (cm)	1,981	θT (unitless)**	0.28

* αx, αy, αz, and U are reported on Datasheet RBCA-V ** Physical Soil Parameter (see Datasheet B)
*** Chemical Properties (see Datasheet C)

Chemical Name	λ (1/day)	Csource* (mg/L)	C(x) (mg/L)
Tetrachloroethylene	0.0009600		

* Note: Csource is the measured concentration at the source for this form.

Datasheet Rf - RBCA Retardation Factors

Datasheet Rf - RBCARetardation Factors presents the information used to calculate the retardation factors used in RBCA Equations R15 and R26. The Retardation Factors are used to modify the Specific Discharge to better represent the rate at which the contaminant moves through the saturated zone. For further information see: Domenico, P.A. and F. W. Schwartz. "Physical and Chemical Hydrogeology". 2nd Edition. John Wiley & Sons. New York. pg. 377.

ks (gwater/gsoil)*	See below	ρs (g/cm³)**	1.90
Koc (gwater/gsoil)*	See below	foc (unitless)**	0.008
η Total Porosity**	0.28		

* ks value reported on Datasheet RBCA-XI ** Physical Soil Properties (see Datasheet B)
***Chemical Properties (see Datasheet C)

Chemical Name	Koc - Subsurface (gwater/gsoil)	ks (gwater/gsoil)	Rf (mg/Lwater)/(mg/kgsoil)
Tetrachloroethylene	155.00	1.2400	9.41

Datasheet C: Chemical Properties

Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm^2/s)	Diffusivity in Water (Dw) (cm^2/s)	Henry's Law Constant (H' @ 25°C)	Organic Carbon Partition Coefficient (Koc - L/kg)	First Order Decay Constant (λ - 1/day)
Tetrachloroethylene	2.00E+002	7.20E-002	8.20E-006	7.54E-001	1.55E+002	0.000960

TETRACHLOROETHENE

GW_{source} DATASHEETS
AREA 2

Datasheet RBCA-V. Migration to Ground Water - Class 1

Datasheet RBCA-V is to be used to propose soil cleanup objectives for the migration to ground water exposure route calculated by the equation in Appendix C, Table C of TACO: Equation R12 (residential, industrial/commercial and construction worker scenarios). Equations described under RBCA-VI and RBCA-VIII as well as the equations in 35 Ill. Adm. Code 620, Subpart F may also be required to generate some of the input values for equation R12. Note; use 35 Ill. Code 620, Subpart F to calculate cleanup objectives for noncarcinogens. Since values listed in RBCA-XIII are used in this evaluation, this datasheet must be submitted. In cases where the target cancer risk (TR) exceeds 1 in 1,000,000, Datasheet -VI must also be submitted.

Land Use Scenario: **ALL**

Institutional Control YES NO

Engineered Barrier YES NO

GWsource (mg/L)	See below	X (cm)	7,315.00
LFsw [(mg/L)/(mg/kg)]*	See below	αx (cm)	732
GWcomp (mg/L)**	See below	αy (cm)	244
C(x)/Csource (unitless)***	See below	αz (cm)	37
U (cm/d)	2.2500	Sw (cm)	1,676
K (cm/d)	209.951	λ (1/d)****	See below
i (cm/cm	0.0030	Sd (cm)	200
θT (cm³/cm³-soil)*****	0.28		

* LFsw reported on Datasheet RBCA-XIII

** GWcomp reported on Datasheet RBCA-VI

*** C(x)/Csource reported on Datsheet RBCA-VI

**** Chemical Parameters (see Datasheet C)

***** Physical Soil Parameters (see Datasheet B)

Chemical Name	GWsource (mg/L)	LFsw (mg/L)/(mg/kg)	GWcomp (mg/L)	C(x)/Csource (unitless)	λ (1/day)	Soil Cleanup Objective (mg/kg)
Tetrachloroethylene	200.000	1.49E-01	0.005	8.95E-07	0.000960	273.538

Datasheet RBCA-VII. Concentration of Contaminant in Groundwater Source

Datasheet RBCA-VII is to be used to predict the groundwater concentration at a specified distance from the source as calculated by the equation in Appendix C of TACO: Equation R26 (residential, industrial/ commercial and construction worker scenarios). Since values listed in Datasheet RBCA-V are used in this evaluation, this datasheet must also be submitted.

Csource (mg/L)	See below	αy (cm)	244
X (cm)	7,315.00	Sd (cm)	200
αx (cm)*	732	αz (cm)	37
λ (1/day)***	See below	K (cm/d)	209.95
U (cm/d)*	2.25	i (unitless)	0.003
Sw (cm)	1,676	θT (unitless)**	0.28

* αx, αy, αz, and U are reported on Datasheet RBCA-V ** Physical Soil Parameter (see Datasheet B)
*** Chemical Properties (see Datasheet C)

Chemical Name	λ (1/day)	Csource* (mg/L)	C(x) (mg/L)
Tetrachloroethylene	0.0009600	0.00000	0.00E+00

* Note: Csource is the measured concentration at the source for this form.

Datasheet Rf - RBCA Retardation Factors

Datasheet Rf - RBCARetardation Factors presents the information used to calculate the retardation factors used in RBCA Equations R15 and R26. The Retardation Factors are used to modify the Specific Discharge to better represent the rate at which the contaminant moves through the saturated zone. For further information see: Domenico, P.A. and F. W. Schwartz. "Physical and Chemical Hydrogeology". 2nd Edition. John Wiley & Sons. New York. pg. 377.

ks (gwater/gsoil)*	See below	ρs (g/cmł)**	1.90
Koc (gwater/gsoil)*	See below	foc (unitless)**	0.008
η Total Porosity**	0.28		

* ks value reported on Datasheet RBCA-XI ** Physical Soil Properties (see Datasheet B)
***Chemical Properties (see Datasheet C)

Chemical Name	Koc - Subsurface (gwater/gsoil)	ks (gwater/gsoil)	Rf (mg/Lwater)/(mg/kgsoil)
Tetrachloroethylene	155.00	1.2400	9.41

Datasheet C: Chemical Properties

Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm^2/s)	Diffusivity in Water (Dw) (cm^2/s)	Henry's Law Constant (H' @ 25°C)	Organic Carbon Partition Coefficient (Koc - L/kg)	First Order Decay Constant (λ - 1/day)
Tetrachloroethylene	2.00E+002	7.20E-002	8.20E-006	7.54E-001	1.55E+002	0.000960

Clayton GROUP SERVICES

TETRACHLOROETHENE

GW_{source} DATASHEETS
FORMER VAPOR DEGREASER AREA

Datasheet RBCA-V. Migration to Ground Water - Class 1

Datasheet RBCA-V is to be used to propose soil cleanup objectives for the migration to ground water exposure route calculated by the equation in Appendix C, Table C of TACO: Equation R12 (residential, industrial/commercial and construction worker scenarios). Equations described under RBCA-VI and RBCA-VIII as well as the equations in 35 Ill. Adm. Code 620, Subpart F may also be required to generate some of the input values for equation R12. Note; use 35 Ill. Code 620, Subpart F to calculate cleanup objectives for noncarcinogens. Since values listed in RBCA-XIII are used in this evaluation, this datasheet must be submitted. In cases where the target cancer risk (TR) exceeds 1 in 1,000,000, Datasheet -VI must also be submitted.

Land Use Scenario: **ALL**

Institutional Control YES NO

Engineered Barrier YES NO

GW_{source} (mg/L)	See below	X (cm)	8,992.00
LF_{sw} [(mg/L)/(mg/kg)]*	See below	α_x (cm)	899
GW_{comp} (mg/L)**	See below	α_y (cm)	300
$C(x)/C_{source}$ (unitless)***	See below	α_z (cm)	45
U (cm/d)	2.2500	S_w (cm)	1,067
K (cm/d)	209.951	λ (1/d)****	See below
i (cm/cm	0.0030	S_d (cm)	200
θ_T (cm³/cm³-soil)*****	0.28		

* LFsw reported on Datasheet RBCA-XIII

** GWcomp reported on Datasheet RBCA-VI

*** C(x)/Csource reported on Datsheet RBCA-VI

**** Chemical Parameters (see Datasheet C)

***** Physical Soil Parameters (see Datasheet B)

Chemical Name	GW_{source} (mg/L)	LF_{sw} (mg/L)/(mg/kg)	GW_{comp} (mg/L)	$C(x)/C_{source}$ (unitless)	λ (1/day)	Soil Cleanup Objective (mg/kg)
Tetrachloroethylene	200.000	1.02E-01	0.005	7.88E-08	0.000960	273.538

Datasheet RBCA-VII. Concentration of Contaminant in Groundwater Source

Datasheet RBCA-VII is to be used to predict the groundwater concentration at a specified distance from the source as calculated by the equation in Appendix C of TACO: Equation R26 (residential, industrial/ commercial and construction worker scenarios). Since values listed in Datasheet RBCA-V are used in this evaluation, this datasheet must also be submitted.

Csource (mg/L)	See below	αy (cm)	300
X (cm)	8,992.00	Sd (cm)	200
αx (cm)*	899	αz (cm)	45
λ (1/day)***	See below	K (cm/d)	209.95
U (cm/d)*	2.25	i (unitless)	0.003
Sw (cm)	1,067	θT (unitless)**	0.28

* αx, αy, αz, and U are reported on Datasheet RBCA-V ** Physical Soil Parameter (see Datasheet B)
*** Chemical Properties (see Datasheet C)

Chemical Name	λ (1/day)	Csource* (mg/L)	C(x) (mg/L)
Tetrachloroethylene	0.0009600	0.00000	0.00E+00

* Note: Csource is the measured concentration at the source for this form.

Datasheet Rf - RBCA Retardation Factors

Datasheet Rf - RBCARetardation Factors presents the information used to calculate the retardation factors used in RBCA Equations R15 and R26. The Retardation Factors are used to modify the Specific Discharge to better represent the rate at which the contaminant moves through the saturated zone. For further information see: Domenico, P.A. and F. W. Schwartz. "Physical and Chemical Hydrogeology". 2nd Edition. John Wiley & Sons. New York. pg. 377.

ks (gwater/gsoil)*	See below	ρs (g/cmł)**	1.90
Koc (gwater/gsoil)*	See below	foc (unitless)**	0.008
η Total Porosity**	0.28		

* ks value reported on Datasheet RBCA-XI ** Physical Soil Properties (see Datasheet B)
***Chemical Properties (see Datasheet C)

Chemical Name	Koc - Subsurface (gwater/gsoil)	ks (gwater/gsoil)	Rf (mg/Lwater)/(mg/kgsoil)
Tetrachloroethylene	155.00	1.2400	9.41

Datasheet C: Chemical Properties

Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm^2/s)	Diffusivity in Water (Dw) (cm^2/s)	Henry's Law Constant (H' @ 25°C)	Organic Carbon Partition Coefficient (Koc - L/kg)	First Order Decay Constant (λ - 1/day)
Tetrachloroethylene	2.00E+002	7.20E-002	8.20E-006	7.54E-001	1.55E+002	0.000960

Clayton GROUP SERVICES

ATTACHMENT C

TRICHLOROETHENE INFORMATION

Clayton GROUP SERVICES

TRICHLOROETHENE

LEACHING FACTOR DATASHEETS

Datasheet RBCA-XIII. LFsw

Datasheet RBCA-XIII is to be used to propose the leaching factor calculated by the equation in Appendix C, Table C of TACO: Equation R14 (residential, industrial/commercial and constructin worker scenarios). The use of Equations R20 and R24 in TACO are necessary to generate some of the input values for Equation R14. Since the values in Datasheet RBCA-XI are used in this evaluation, this Datasheet must also be submitted.

ks (gwater/gsoil)*	See below	ρs (g/cm³)**	1.72
H' (unitless)***	See below	θws (unitless)**	0.35
Ugw (cm/yr)****	229.90	θas (unitless)**	0.03
K (cm/yr)	76,632.00		
i (unitless)	0.003		
δgw (cm)	200		
I (cm/yr)	7		
W (cm)	9.144		

* ks value reported on Datasheet RBCA-XI ** Physical Soil Properties (see Datasheet B)
Chemical Properties (see Datasheet C) * Ugw value as calculated using Equation R24

Chemical Name	ks (gwater/gsoil)	H' (unitless)	LFsw (mg/Lwater)/(mg/kgsoil)
Trichloroethylene	1.1620	4.22E-001	3.64E-02

Datasheet RBCA-XI. ks

Datasheet RBCA-XI is to be used to propose the soil water sorption coefficient (ks) calculated by the equation in Appendix C, Table C of TACO: Equation R20 (residential, industrial/commercial and construction worker scenarios).

Land Use Scenario: **Residential, Industrial/Commercial and Construction Worker**

Chemical Name	Surface Soils				Subsurface Soils			
	pH	Koc* (cm³/g)	foc** (g/g)	ks (g/g$_{soil}$)/(g/cm³$_{water}$)	pH	Koc* (cm³/g)	foc** (g/g)	ks (g/g$_{soil}$)/(g/cm³$_{water}$)
Trichloroethylene	6.80	1.66E+002	0.006	0.99600	6.80	1.66E+002	0.007	1.16200

* Chemical Properties (see Datasheet C)
** Physical Soil Parameters (see Datasheet B)

Datasheet E: Soil Saturation Limits

Chemical	Constituent Properties: Solubility mg/L	Kd (Surface) cm³/g	Kd (Subsurface) cm³/g	Henry's Law Constant (H') (dimensionless)	Organic Carbon Partition Coefficient (Koc)	Saturation Limits: Csat (Surface Soils) mg/kg	Csat (Subsurface Soils) mg/kg
Trichloroethylene	1.10E+003	0.996	1.162	4.22E-001	1.66E+002	1,292.25	1,510.97

TRICHLOROETHENE

GW_{source} DATASHEETS
FORMER FILL PIPE AREA

15-65263ca241

Datasheet RBCA-V. Migration to Ground Water - Class 1

Datasheet RBCA-V is to be used to propose soil cleanup objectives for the migration to ground water exposure route calculated by the equation in Appendix C, Table C of TACO: Equation R12 (residential, industrial/commercial and construction worker scenarios). Equations described under RBCA-VI and RBCA-VIII as well as the equations in 35 Ill. Adm. Code 620, Subpart F may also be required to generate some of the input values for equation R12. Note; use 35 Ill. Code 620, Subpart F to calculate cleanup objectives for noncarcinogens. Since values listed in RBCA-XIII are used in this evaluation, this datasheet must be submitted. In cases where the target cancer risk (TR) exceeds 1 in 1,000,000, Datasheet -VI must also be submitted.

Land Use Scenario: **ALL**

Institutional Control YES NO

Engineered Barrier YES NO

GWsource (mg/L)	See below	X (cm)	18,593.00
LFsw [(mg/L)/(mg/kg)]*	See below	αx (cm)	1,859
GWcomp (mg/L)**	See below	αy (cm)	620
C(x)/Csource (unitless)***	See below	αz (cm)	93
U (cm/d)	2.2500	Sw (cm)	3,505
K (cm/d)	209.951	λ (1/d)****	See below
i (cm/cm	0.0030	Sd (cm)	200
θT (cmł/cmł-soil)*****	0.28		

* LFsw reported on Datasheet RBCA-XIII

** GWcomp reported on Datasheet RBCA-VI

*** C(x)/Csource reported on Datsheet RBCA-VI

**** Chemical Parameters (see Datasheet C)

***** Physical Soil Parameters (see Datasheet B)

Chemical Name	GWsource (mg/L)	LFsw (mg/L)/(mg/kg)	GWcomp (mg/L)	C(x)/Csource (unitless)	λ (1/day)	Soil Cleanup Objective (mg/kg)
Trichloroethylene	1100.000	3.51E-02	0.005	1.76E-07	0.000420	1573.109

Datasheet RBCA-VII. Concentration of Contaminant in Groundwater Source

Datasheet RBCA-VII is to be used to predict the groundwater concentration at a specified distance from the source as calculated by the equation in Appendix C of TACO: Equation R26 (residential, industrial/ commercial and construction worker scenarios). Since values listed in Datasheet RBCA-V are used in this evaluation, this datasheet must also be submitted.

Csource (mg/L)	See below	αy (cm)	620
X (cm)	18,593.00	Sd (cm)	200
αx (cm)*	1,859	αz (cm)	93
λ (1/day)***	See below	K (cm/d)	209.95
U (cm/d)*	2.25	i (unitless)	0.003
Sw (cm)	3,505	θT (unitless)**	0.28

* αx, αy, αz, and U are reported on Datasheet RBCA-V ** Physical Soil Parameter (see Datasheet B)
*** Chemical Properties (see Datasheet C)

Chemical Name	λ (1/day)	Csource* (mg/L)	C(x) (mg/L)
Trichloroethylene	0.0004200		

* Note: Csource is the measured concentration at the source for this form.

Datasheet Rf - RBCA Retardation Factors

Datasheet Rf - RBCARetardation Factors presents the information used to calculate the retardation factors used in RBCA Equations R15 and R26. The Retardation Factors are used to modify the Specific Discharge to better represent the rate at which the contaminant moves through the saturated zone. For further information see: Domenico, P.A. and F. W. Schwartz. "Physical and Chemical Hydrogeology". 2nd Edition. John Wiley & Sons. New York. pg. 377.

ks (gwater/gsoil)*	See below	ρs (g/cmł)**	1.90
Koc (gwater/gsoil)*	See below	foc (unitless)**	0.008
η Total Porosity**	0.28		

* ks value reported on Datasheet RBCA-XI ** Physical Soil Properties (see Datasheet B)
***Chemical Properties (see Datasheet C)

Chemical Name	Koc - Subsurface (gwater/gsoil)	ks (gwater/gsoil)	Rf (mg/Lwater)/(mg/kgsoil)
Trichloroethylene	166.00	1.3280	10.01

Datasheet C: Chemical Properties

Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm^2/s)	Diffusivity in Water (Dw) (cm^2/s)	Henry's Law Constant (H' @ 25°C)	Organic Carbon Partition Coefficient (Koc - L/kg)	First Order Decay Constant (λ - 1/day)
Trichloroethylene	1.10E+003	7.90E-002	9.10E-006	4.22E-001	1.66E+002	0.000420

TRICHLOROETHENE

GW_{source} DATASHEETS
AREA 2
SOUTHWEST PORTION OF FORMER FILL PIPE AREA

Datasheet RBCA-V. Migration to Ground Water - Class 1

Datasheet RBCA-V is to be used to propose soil cleanup objectives for the migration to ground water exposure route calculated by the equation in Appendix C, Table C of TACO: Equation R12 (residential, industrial/commercial and construction worker scenarios). Equations described under RBCA-VI and RBCA-VIII as well as the equations in 35 Ill. Adm. Code 620, Subpart F may also be required to generate some of the input values for equation R12. Note; use 35 Ill. Code 620, Subpart F to calculate cleanup objectives for noncarcinogens. Since values listed in RBCA-XIII are used in this evaluation, this datasheet must be submitted. In cases where the target cancer risk (TR) exceeds 1 in 1,000,000, Datasheet -VI must also be submitted.

Land Use Scenario: **ALL**

Institutional Control YES NO

Engineered Barrier YES NO

GWsource (mg/L)	See below	X (cm)	7,071.00
LFsw [(mg/L)/(mg/kg)]*	See below	α_x (cm)	707
GWcomp (mg/L)**	See below	α_y (cm)	236
C(x)/Csource (unitless)***	See below	α_z (cm)	35
U (cm/d)	2.2500	Sw (cm)	3,962
K (cm/d)	209.951	λ (1/d)****	See below
i (cm/cm	0.0030	Sd (cm)	200
θ_T (cm³/cm³-soil)*****	0.28		

* LFsw reported on Datasheet RBCA-XIII ** GWcomp reported on Datasheet RBCA-VI

*** C(x)/Csource reported on Datsheet RBCA-VI **** Chemical Parameters (see Datasheet C)

***** Physical Soil Parameters (see Datasheet B)

Chemical Name	GWsource (mg/L)	LFsw (mg/L)/(mg/kg)	GWcomp (mg/L)	C(x)/Csource (unitless)	λ (1/day)	Soil Cleanup Objective (mg/kg)
Trichloroethylene	12.9739	2.63E-01	0.005	3.85E-04	0.000420	49.280

Datasheet RBCA-VII. Concentration of Contaminant in Groundwater Source

Datasheet RBCA-VII is to be used to predict the groundwater concentration at a specified distance from the source as calculated by the equation in Appendix C of TACO: Equation R26 (residential, industrial/ commercial and construction worker scenarios). Since values listed in Datasheet RBCA-V are used in this evaluation, this datasheet must also be submitted.

Csource (mg/L)	See below	αy (cm)	236
X (cm)	7,071.00	Sd (cm)	200
αx (cm)*	707	αz (cm)	35
λ (1/day)***	See below	K (cm/d)	209.95
U (cm/d)*	2.25	i (unitless)	0.003
Sw (cm)	3,962	θT (unitless)**	0.28

* αx, αy, αz, and U are reported on Datasheet RBCA-V ** Physical Soil Parameter (see Datasheet B)
*** Chemical Properties (see Datasheet C)

Chemical Name	λ (1/day)	Csource* (mg/L)	C(x) (mg/L)
Trichloroethylene	0.0004200	0.00000	0.00E+00

* Note: Csource is the measured concentration at the source for this form.

Datasheet Rf - RBCA Retardation Factors

Datasheet Rf - RBCARetardation Factors presents the information used to calculate the retardation factors used in RBCA Equations R15 and R26. The Retardation Factors are used to modify the Specific Discharge to better represent the rate at which the contaminant moves through the saturated zone. For further information see: Domenico, P.A. and F. W. Schwartz. "Physical and Chemical Hydrogeology". 2nd Edition. John Wiley & Sons. New York. pg. 377.

ks (gwater/gsoil)*	See below	ρs (g/cm³)**	1.90
Koc (gwater/gsoil)*	See below	foc (unitless)**	0.008
η Total Porosity**	0.28		

* ks value reported on Datasheet RBCA-XI ** Physical Soil Properties (see Datasheet B)
***Chemical Properties (see Datasheet C)

Chemical Name	Koc - Subsurface (gwater/gsoil)	ks (gwater/gsoil)	Rf (mg/Lwater)/(mg/kgsoil)
Trichloroethylene	166.00	1.3280	10.01

Clayton GROUP SERVICES

TRICHLOROETHENE

GW_{source} DATASHEETS
FORMER VAPOR DEGREASER AREA

15-65263ca241

Datasheet RBCA-V. Migration to Ground Water - Class 1

Datasheet RBCA-V is to be used to propose soil cleanup objectives for the migration to ground water exposure route calculated by the equation in Appendix C, Table C of TACO: Equation R12 (residential, industrial/commercial and construction worker scenarios). Equations described under RBCA-VI and RBCA-VIII as well as the equations in 35 Ill. Adm. Code 620, Subpart F may also be required to generate some of the input values for equation R12. Note; use 35 Ill. Code 620, Subpart F to calculate cleanup objectives for noncarcinogens. Since values listed in RBCA-XIII are used in this evaluation, this datasheet must be submitted. In cases where the target cancer risk (TR) exceeds 1 in 1,000,000, Datasheet -VI must also be submitted.

Land Use Scenario: **ALL**

Institutional Control YES NO

Engineered Barrier YES NO

GWsource (mg/L)	See below	X (cm)	8,534.00
LFsw [(mg/L)/(mg/kg)]*	See below	αx (cm)	853
GWcomp (mg/L)**	See below	αy (cm)	284
C(x)/Csource (unitless)***	See below	αz (cm)	43
U (cm/d)	2.2500	Sw (cm)	3,810
K (cm/d)	209.951	λ (1/d)****	See below
i (cm/cm	0.0030	Sd (cm)	200
θT (cm³/cm³-soil)*****	0.28		

* LFsw reported on Datasheet RBCA-XIII ** GWcomp reported on Datasheet RBCA-VI

*** C(x)/Csource reported on Datsheet RBCA-VI **** Chemical Parameters (see Datasheet C)

***** Physical Soil Parameters (see Datasheet B)

Chemical Name	GWsource (mg/L)	LFsw (mg/L)/(mg/kg)	GWcomp (mg/L)	C(x)/Csource (unitless)	λ (1/day)	Soil Cleanup Objective (mg/kg)
Trichloroethylene	43.5543	2.57E-01	0.005	1.15E-04	0.000420	169.555

Datasheet RBCA-VII. Concentration of Contaminant in Groundwater Source

Datasheet RBCA-VII is to be used to predict the groundwater concentration at a specified distance from the source as calculated by the equation in Appendix C of TACO: Equation R26 (residential, industrial/ commercial and construction worker scenarios). Since values listed in Datasheet RBCA-V are used in this evaluation, this datasheet must also be submitted.

Csource (mg/L)	See below	αy (cm)	284
X (cm)	8,534.00	Sd (cm)	200
αx (cm)*	853	αz (cm)	43
λ (1/day)***	See below	K (cm/d)	209.95
U (cm/d)*	2.25	i (unitless)	0.003
Sw (cm)	3,810	θT (unitless)**	0.28

* αx, αy, αz, and U are reported on Datasheet RBCA-V ** Physical Soil Parameter (see Datasheet B)
*** Chemical Properties (see Datasheet C)

Chemical Name	λ (1/day)	Csource* (mg/L)	C(x) (mg/L)
Trichloroethylene	0.0004200	0.00000	0.00E+00

* Note: Csource is the measured concentration at the source for this form.

Datasheet Rf - RBCA Retardation Factors

Datasheet Rf - RBCARetardation Factors presents the information used to calculate the retardation factors used in RBCA Equations R15 and R26. The Retardation Factors are used to modify the Specific Discharge to better represent the rate at which the contaminant moves through the saturated zone. For further information see: Domenico, P.A. and F. W. Schwartz. "Physical and Chemical Hydrogeology". 2nd Edition. John Wiley & Sons. New York. pg. 377.

ks (gwater/gsoil)*	See below	ρs (g/cm‡)**	1.90
Koc (gwater/gsoil)*	See below	foc (unitless)**	0.008
η Total Porosity**	0.28		

* ks value reported on Datasheet RBCA-XI ** Physical Soil Properties (see Datasheet B)
***Chemical Properties (see Datasheet C)

Chemical Name	Koc - Subsurface (gwater/gsoil)	ks (gwater/gsoil)	Rf (mg/Lwater)/(mg/kgsoil)
Trichloroethylene	166.00	1.3280	10.01

Clayton GROUP SERVICES

ATTACHMENT D

1,1,1-TRICHLOROETHANE INFORMATION

Clayton GROUP SERVICES

1,1,1-TCA

LEACHING FACTOR DATASHEETS

Datasheet RBCA-XIII. LFsw

Datasheet RBCA-XIII is to be used to propose the leaching factor calculated by the equation in Appendix C, Table C of TACO: Equation R14 (residential, industrial/commercial and constructin worker scenarios). The use of Equations R20 and R24 in TACO are necessary to generate some of the input values for Equation R14. Since the values in Datasheet RBCA-XI are used in this evaluation, this Datasheet must also be submitted.

ks (gwater/gsoil)*	See below	ρs (g/cm³)**	1.72
H' (unitless)***	See below	θws (unitless)**	0.35
Ugw (cm/yr)****	229.90	θas (unitless)**	0.03
K (cm/yr)	76,632.00		
i (unitless)	0.003		
δgw (cm)	200		
I (cm/yr)	7		
W (cm)	1.676		

* ks value reported on Datasheet RBCA-XI ** Physical Soil Properties (see Datasheet B)
Chemical Properties (see Datasheet C) * Ugw value as calculated using Equation R24

Chemical Name	ks (gwater/gsoil)	H' (unitless)	LFsw (mg/Lwater)/(mg/kgsoil)
Trichloroethane, 1,1,1-	0.7700	7.05E-001	5.07E-02

Datasheet RBCA-XI. ks

Datasheet RBCA-XI is to be used to propose the soil water sorption coefficient (ks) calculated by the equation in Appendix C, Table C of TACO: Equation R20 (residential, industrial/commercial and construction worker scenarios).

Land Use Scenario: **Residential, Industrial/Commercial and Construction Worker**

Chemical Name	Surface Soils				Subsurface Soils			
	pH	Koc* (cm³/g)	foc** (g/g)	ks (g/g$_{soil}$)/(g/cm³$_{water}$)	pH	Koc* (cm³/g)	foc** (g/g)	ks (g/g$_{soil}$)/(g/cm³$_{water}$)
Trichloroethane, 1,1,1-	6.80	1.10E+002	0.006	0.66000	6.80	1.10E+002	0.007	0.77000

* Chemical Properties (see Datasheet C)

** Physical Soil Parameters (see Datasheet B)

Datasheet E: Soil Saturation Limits

Chemical	Constituent Properties					Saturation Limits	
	Solubility mg/L	Kd (Surface) cm³/g	Kd (Subsurface) cm³/g	Henry's Law Constant (H') (dimensionless)	Organic Carbon Partition Coefficient (Koc)	Csat (Surface Soils) mg/kg	Csat (Subsurface Soils) mg/kg
Trichloroethane, 1,1,1-	1.33E+003	0.660	0.770	7.05E-001	1.10E+002	1,185.83	1,311.23

Clayton
GROUP SERVICES

1,1,1-TCA

GW_{source} DATASHEETS
NORTHEAST PORTION OF FORMER FILL PIPE AREA

Datasheet RBCA-V. Migration to Ground Water - Class 1

Datasheet RBCA-V is to be used to propose soil cleanup objectives for the migration to ground water exposure route calculated by the equation in Appendix C, Table C of TACO: Equation R12 (residential, industrial/commercial and construction worker scenarios). Equations described under RBCA-VI and RBCA-VIII as well as the equations in 35 Ill. Adm. Code 620, Subpart F may also be required to generate some of the input values for equation R12. Note; use 35 Ill. Code 620, Subpart F to calculate cleanup objectives for noncarcinogens. Since values listed in RBCA-XIII are used in this evaluation, this datasheet must be submitted. In cases where the target cancer risk (TR) exceeds 1 in 1,000,000, Datasheet -VI must also be submitted.

Land Use Scenario: **ALL**

Institutional Control YES NO

Engineered Barrier YES NO

GW_{source} (mg/L)	See below	X (cm)	24,384.00
LFsw [(mg/L)/(mg/kg)]*	See below	α_x (cm)	2,438
GW_{comp} (mg/L)**	See below	α_y (cm)	813
$C(x)/C_{source}$ (unitless)***	See below	α_z (cm)	122
U (cm/d)	2.2500	Sw (cm)	1,372
K (cm/d)	209.951	λ (1/d)****	See below
i (cm/cm	0.0030	Sd (cm)	200
θ_T (cm³/cm³-soil)*****	0.28		

* LFsw reported on Datasheet RBCA-XIII ** GWcomp reported on Datasheet RBCA-VI

*** C(x)/Csource reported on Datsheet RBCA-VI **** Chemical Parameters (see Datasheet C)

***** Physical Soil Parameters (see Datasheet B)

Chemical Name	GW_{source} (mg/L)	LFsw (mg/L)/(mg/kg)	GW_{comp} (mg/L)	$C(x)/C_{source}$ (unitless)	λ (1/day)	Soil Cleanup Objective (mg/kg)
Trichloroethane, 1,1,1-	1330.000	1.72E-01	0.2	2.12E-13	0.001300	1335.012

Datasheet RBCA-VII. Concentration of Contaminant in Groundwater Source

Datasheet RBCA-VII is to be used to predict the groundwater concentration at a specified distance from the source as calculated by the equation in Appendix C of TACO: Equation R26 (residential, industrial/ commercial and construction worker scenarios). Since values listed in Datasheet RBCA-V are used in this evaluation, this datasheet must also be submitted.

Csource (mg/L)	See below	αy (cm)	813
X (cm)	24,384.00	Sd (cm)	200
αx (cm)*	2,438	αz (cm)	122
λ (1/day)***	See below	K (cm/d)	209.95
U (cm/d)*	2.25	i (unitless)	0.003
Sw (cm)	1,372	θT (unitless)**	0.28

* αx, αy, αz, and U are reported on Datasheet RBCA-V ** Physical Soil Parameter (see Datasheet B)
*** Chemical Properties (see Datasheet C)

Chemical Name	λ (1/day)	Csource* (mg/L)	C(x) (mg/L)
Trichloroethane, 1,1,1-	0.0013000	0.00000	0.00E+00

* Note: Csource is the measured concentration at the source for this form.

Datasheet Rf - RBCA Retardation Factors

Datasheet Rf - RBCARetardation Factors presents the information used to calculate the retardation factors used in RBCA Equations R15 and R26. The Retardation Factors are used to modify the Specific Discharge to better represent the rate at which the contaminant moves through the saturated zone. For further information see: Domenico, P.A. and F. W. Schwartz. "Physical and Chemical Hydrogeology". 2nd Edition. John Wiley & Sons. New York. pg. 377.

ks (gwater/gsoil)*	See below	ρs (g/cm‡)**	1.90
Koc (gwater/gsoil)*	See below	foc (unitless)**	0.008
η Total Porosity**	0.28		

* ks value reported on Datasheet RBCA-XI ** Physical Soil Properties (see Datasheet B)
***Chemical Properties (see Datasheet C)

Chemical Name	Koc - Subsurface (gwater/gsoil)	ks (gwater/gsoil)	Rf (mg/Lwater)/(mg/kgsoil)
Trichloroethane, 1,1,1-	110.00	0.8800	6.97

Datasheet C: Chemical Properties

Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm^2/s)	Diffusivity in Water (Dw) (cm^2/s)	Henry's Law Constant (H' @ 25°C)	Organic Carbon Partition Coefficient (Koc - L/kg)	First Order Decay Constant (λ - 1/day)
Trichloroethane, 1,1,1-	1.33E+003	7.80E-002	8.80E-006	7.05E-001	1.10E+002	0.001300

Clayton GROUP SERVICES

1,1,1-TCA

GW_{source} DATASHEETS
SOUTHWEST PORTION OF FORMER FILL PIPE AREA

Datasheet RBCA-V. Migration to Ground Water - Class 1

Datasheet RBCA-V is to be used to propose soil cleanup objectives for the migration to ground water exposure route calculated by the equation in Appendix C, Table C of TACO: Equation R12 (residential, industrial/commercial and construction worker scenarios). Equations described under RBCA-VI and RBCA-VIII as well as the equations in 35 Ill. Adm. Code 620, Subpart F may also be required to generate some of the input values for equation R12. Note; use 35 Ill. Code 620, Subpart F to calculate cleanup objectives for noncarcinogens. Since values listed in RBCA-XIII are used in this evaluation, this datasheet must be submitted. In cases where the target cancer risk (TR) exceeds 1 in 1,000,000, Datasheet -VI must also be submitted.

Land Use Scenario: **ALL**

Institutional Control YES NO

Engineered Barrier YES NO

GWsource (mg/L)	See below	X (cm)	18,898.00
LFsw [(mg/L)/(mg/kg)]*	See below	αx (cm)	1,890
GWcomp (mg/L)**	See below	αy (cm)	630
C(x)/Csource (unitless)***	See below	αz (cm)	94
U (cm/d)	2.2500	Sw (cm)	1,067
K (cm/d)	209.951	λ (1/d)****	See below
i (cm/cm	0.0030	Sd (cm)	200
θT (cm³/cm³-soil)*****	0.28		

* LFsw reported on Datasheet RBCA-XIII ** GWcomp reported on Datasheet RBCA-VI

*** C(x)/Csource reported on Datsheet RBCA-VI **** Chemical Parameters (see Datasheet C)

***** Physical Soil Parameters (see Datasheet B)

Chemical Name	GWsource (mg/L)	LFsw (mg/L)/(mg/kg)	GWcomp (mg/L)	C(x)/Csource (unitless)	λ (1/day)	Soil Cleanup Objective (mg/kg)
Trichloroethane, 1,1,1-	1330.000	1.39E-01	0.2	8.59E-12	0.001300	1335.012

Datasheet RBCA-VII. Concentration of Contaminant in Groundwater Source

Datasheet RBCA-VII is to be used to predict the groundwater concentration at a specified distance from the source as calculated by the equation in Appendix C of TACO: Equation R26 (residential, industrial/ commercial and construction worker scenarios). Since values listed in Datasheet RBCA-V are used in this evaluation, this datasheet must also be submitted.

Csource (mg/L)	See below	αy (cm)	630
X (cm)	18,898.00	Sd (cm)	200
αx (cm)*	1,890	αz (cm)	94
λ (1/day)***	See below	K (cm/d)	209.95
U (cm/d)*	2.25	i (unitless)	0.003
Sw (cm)	1,067	θT (unitless)**	0.28

* αx, αy, αz, and U are reported on Datasheet RBCA-V ** Physical Soil Parameter (see Datasheet B)
*** Chemical Properties (see Datasheet C)

Chemical Name	λ (1/day)	Csource* (mg/L)	C(x) (mg/L)
Trichloroethane, 1,1,1-	0.0013000	0.00000	0.00E+00

* Note: Csource is the measured concentration at the source for this form.

Datasheet Rf - RBCA Retardation Factors

Datasheet Rf - RBCARetardation Factors presents the information used to calculate the retardation factors used in RBCA Equations R15 and R26. The Retardation Factors are used to modify the Specific Discharge to better represent the rate at which the contaminant moves through the saturated zone. For further information see: Domenico, P.A. and F. W. Schwartz. "Physical and Chemical Hydrogeology". 2nd Edition. John Wiley & Sons. New York. pg. 377.

ks (gwater/gsoil)*	See below	ρs (g/cm‡)**	1.90
Koc (gwater/gsoil)*	See below	foc (unitless)**	0.008
η Total Porosity**	0.28		

* ks value reported on Datasheet RBCA-XI ** Physical Soil Properties (see Datasheet B)
***Chemical Properties (see Datasheet C)

Chemical Name	Koc - Subsurface (gwater/gsoil)	ks (gwater/gsoil)	Rf (mg/Lwater)/(mg/kgsoil)
Trichloroethane, 1,1,1-	110.00	0.8800	6.97

Datasheet C: Chemical Properties

Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm^2/s)	Diffusivity in Water (Dw) (cm^2/s)	Henry's Law Constant (H' @ 25°C)	Organic Carbon Partition Coefficient (Koc - L/kg)	First Order Decay Constant (λ - 1/day)
Trichloroethane, 1,1,1-	1.33E+003	7.80E-002	8.80E-006	7.05E-001	1.10E+002	0.001300

Clayton GROUP SERVICES

ATTACHMENT E

VINYL CHLORIDE

Clayton GROUP SERVICES

VINYL CHLORIDE

LEACHING FACTOR DATASHEETS

15-65263ca241

Datasheet RBCA-XIII. LFsw

Datasheet RBCA-XIII is to be used to propose the leaching factor calculated by the equation in Appendix C, Table C of TACO: Equation R14 (residential, industrial/commercial and constructin worker scenarios). The use of Equations R20 and R24 in TACO are necessary to generate some of the input values for Equation R14. Since the values in Datasheet RBCA-XI are used in this evaluation, this Datasheet must also be submitted.

ks (gwater/gsoil)*	See below	ρs (g/cm³)**	1.72
H' (unitless)***	See below	θws (unitless)**	0.35
Ugw (cm/yr)****	229.90	θas (unitless)**	0.03
K (cm/yr)	76,632.00		
i (unitless)	0.003		
δgw (cm)	200		
I (cm/yr)	7		
W (cm)	8.077		

* ks value reported on Datasheet RBCA-XI ** Physical Soil Properties (see Datasheet B)
Chemical Properties (see Datasheet C) * Ugw value as calculated using Equation R24

Chemical Name	ks (gwater/gsoil)	H' (unitless)	LFsw (mg/Lwater)/(mg/kgsoil)
Vinyl chloride	0.1302	1.11E+00	1.42E-01

Datasheet RBCA-XI. ks

Datasheet RBCA-XI is to be used to propose the soil water sorption coefficient (ks) calculated by the equation in Appendix C, Table C of TACO: Equation R20 (residential, industrial/commercial and construction worker scenarios).

Land Use Scenario: **Residential, Industrial/Commercial and Construction Worker**

Chemical Name	Surface Soils				Subsurface Soils			
	pH	Koc* (cm³/g)	foc** (g/g)	ks (g/g$_{soil}$)/(g/cm³$_{water}$)	pH	Koc* (cm³/g)	foc** (g/g)	ks (g/g$_{soil}$)/(g/cm³$_{water}$)
Vinyl chloride	6.80	1.86E+001	0.006	0.11160	6.80	1.86E+001	0.007	0.13020

* Chemical Properties (see Datasheet C)

** Physical Soil Parameters (see Datasheet B)

Clayton GROUP SERVICES

VINYL CHLORIDE

GW_{source} DATASHEETS
FORMER FILL PIPE AREA

Datasheet RBCA-V. Migration to Ground Water - Class 1

Datasheet RBCA-V is to be used to propose soil cleanup objectives for the migration to ground water exposure route calculated by the equation in Appendix C, Table C of TACO: Equation R12 (residential, industrial/commercial and construction worker scenarios). Equations described under RBCA-VI and RBCA-VIII as well as the equations in 35 Ill. Adm. Code 620, Subpart F may also be required to generate some of the input values for equation R12. Note; use 35 Ill. Code 620, Subpart F to calculate cleanup objectives for noncarcinogens. Since values listed in RBCA-XIII are used in this evaluation, this datasheet must be submitted. In cases where the target cancer risk (TR) exceeds 1 in 1,000,000, Datasheet -VI must also be submitted.

Land Use Scenario: **ALL**

Institutional Control YES NO

Engineered Barrier YES NO

GWsource (mg/L)	See below	X (cm)	19,506.00
LFsw [(mg/L)/(mg/kg)]*	See below	αx (cm)	1,951
GWcomp (mg/L)**	See below	αy (cm)	650
C(x)/Csource (unitless)***	See below	αz (cm)	98
U (cm/d)	2.2500	Sw (cm)	3,048
K (cm/d)	209.951	λ (1/d)****	See below
i (cm/cm	0.0030	Sd (cm)	200
θT (cm³/cm³-soil)*****	0.28		

* LFsw reported on Datasheet RBCA-XIII ** GWcomp reported on Datasheet RBCA-VI

*** C(x)/Csource reported on Datsheet RBCA-VI **** Chemical Parameters (see Datasheet C)

***** Physical Soil Parameters (see Datasheet B)

Chemical Name	GWsource (mg/L)	LFsw (mg/L)/(mg/kg)	GWcomp (mg/L)	C(x)/Csource (unitless)	λ (1/day)	Soil Cleanup Objective (mg/kg)
Vinyl chloride	0.2010	1.63E-01	0.002	9.95E-03	0.000240	1.230

Datasheet RBCA-VII. Concentration of Contaminant in Groundwater Source

Datasheet RBCA-VII is to be used to predict the groundwater concentration at a specified distance from the source as calculated by the equation in Appendix C of TACO: Equation R26 (residential, industrial/ commercial and construction worker scenarios). Since values listed in Datasheet RBCA-V are used in this evaluation, this datasheet must also be submitted.

Csource (mg/L)	See below	αy (cm)	650
X (cm)	19,506.00	Sd (cm)	200
αx (cm)*	1,951	αz (cm)	98
λ (1/day)***	See below	K (cm/d)	209.95
U (cm/d)*	2.25	i (unitless)	0.003
Sw (cm)	3,048	θT (unitless)**	0.28

* αx, αy, αz, and U are reported on Datasheet RBCA-V ** Physical Soil Parameter (see Datasheet B)
*** Chemical Properties (see Datasheet C)

Chemical Name	λ (1/day)	Csource* (mg/L)	C(x) (mg/L)
Vinyl chloride	0.0002400		

* Note: Csource is the measured concentration at the source for this form.

Datasheet Rf - RBCA Retardation Factors

Datasheet Rf - RBCARetardation Factors presents the information used to calculate the retardation factors used in RBCA Equations R15 and R26. The Retardation Factors are used to modify the Specific Discharge to better represent the rate at which the contaminant moves through the saturated zone. For further information see: Domenico, P.A. and F. W. Schwartz. "Physical and Chemical Hydrogeology". 2nd Edition. John Wiley & Sons. New York. pg. 377.

ks (gwater/gsoil)*	See below	ρs (g/cm³)**	1.90
Koc (gwater/gsoil)*	See below	foc (unitless)**	0.008
n Total Porosity**	0.28		

* ks value reported on Datasheet RBCA-XI

** Physical Soil Properties (see Datasheet B)

***Chemical Properties (see Datasheet C)

Chemical Name	Koc - Subsurface (gwater/gsoil)	ks (gwater/gsoil)	Rf (mg/Lwater)/(mg/kgsoil)
Vinyl chloride	18.60	0.1488	2.01

VINYL CHLORIDE

GW_{source} DATASHEETS
AREA 2

15-65263ca241

Datasheet RBCA-V. Migration to Ground Water - Class 1

Datasheet RBCA-V is to be used to propose soil cleanup objectives for the migration to ground water exposure route calculated by the equation in Appendix C, Table C of TACO: Equation R12 (residential, industrial/commercial and construction worker scenarios). Equations described under RBCA-VI and RBCA-VIII as well as the equations in 35 Ill. Adm. Code 620, Subpart F may also be required to generate some of the input values for equation R12. Note; use 35 Ill. Code 620, Subpart F to calculate cleanup objectives for noncarcinogens. Since values listed in RBCA-XIII are used in this evaluation, this datasheet must be submitted. In cases where the target cancer risk (TR) exceeds 1 in 1,000,000, Datasheet -VI must also be submitted.

Land Use Scenario: **ALL**

Institutional Control YES NO

Engineered Barrier YES NO

GW_{source} (mg/L)	See below	X (cm)	7,315.00
LF_{sw} [(mg/L)/(mg/kg)]*	See below	α_x (cm)	732
GW_{comp} (mg/L)**	See below	α_y (cm)	244
C(x)/C_{source} (unitless)***	See below	α_z (cm)	37
U (cm/d)	2.2500	S_w (cm)	2,591
K (cm/d)	209.951	λ (1/d)****	See below
i (cm/cm	0.0030	S_d (cm)	200
θ_T (cm³/cm³-soil)*****	0.28		

* LFsw reported on Datasheet RBCA-XIII ** GWcomp reported on Datasheet RBCA-VI

*** C(x)/Csource reported on Datsheet RBCA-VI **** Chemical Parameters (see Datasheet C)

***** Physical Soil Parameters (see Datasheet B)

Chemical Name	GW_{source} (mg/L)	LF_{sw} (mg/L)/(mg/kg)	GW_{comp} (mg/L)	C(x)/C_{source} (unitless)	λ (1/day)	Soil Cleanup Objective (mg/kg)
Vinyl chloride	0.0156	1.63E-01	0.002	1.28E-01	0.000240	0.096

Datasheet RBCA-VII. Concentration of Contaminant in Groundwater Source

Datasheet RBCA-VII is to be used to predict the groundwater concentration at a specified distance from the source as calculated by the equation in Appendix C of TACO: Equation R26 (residential, industrial/ commercial and construction worker scenarios). Since values listed in Datasheet RBCA-V are used in this evaluation, this datasheet must also be submitted.

Csource (mg/L)	See below	αy (cm)	244
X (cm)	7,315.00	Sd (cm)	200
αx (cm)*	732	αz (cm)	37
λ (1/day)***	See below	K (cm/d)	209.95
U (cm/d)*	2.25	i (unitless)	0.003
Sw (cm)	2,591	θT (unitless)**	0.28

* αx, αy, αz, and U are reported on Datasheet RBCA-V ** Physical Soil Parameter (see Datasheet B)
*** Chemical Properties (see Datasheet C)

Chemical Name	λ (1/day)	Csource* (mg/L)	C(x) (mg/L)
Vinyl chloride	0.0002400		

* Note: Csource is the measured concentration at the source for this form.

Datasheet Rf - RBCA Retardation Factors

Datasheet Rf - RBCARetardation Factors presents the information used to calculate the retardation factors used in RBCA Equations R15 and R26. The Retardation Factors are used to modify the Specific Discharge to better represent the rate at which the contaminant moves through the saturated zone. For further information see: Domenico, P.A. and F. W. Schwartz. "Physical and Chemical Hydrogeology". 2nd Edition. John Wiley & Sons. New York. pg. 377.

ks (gwater/gsoil)*	See below	ρs (g/cm‡)**	1.90
Koc (gwater/gsoil)*	See below	foc (unitless)**	0.008
η Total Porosity**	0.28		

* ks value reported on Datasheet RBCA-XI ** Physical Soil Properties (see Datasheet B)
***Chemical Properties (see Datasheet C)

Chemical Name	Koc - Subsurface (gwater/gsoil)	ks (gwater/gsoil)	Rf (mg/Lwater)/(mg/kgsoil)
Vinyl chloride	18.60	0.1488	2.01

VINYL CHLORIDE

GW_{source} DATASHEETS
FORMER VAPOR DEGREASER AREA

15-65263ca241

Datasheet RBCA-V. Migration to Ground Water - Class 1

Datasheet RBCA-V is to be used to propose soil cleanup objectives for the migration to ground water exposure route calculated by the equation in Appendix C, Table C of TACO: Equation R12 (residential, industrial/commercial and construction worker scenarios). Equations described under RBCA-VI and RBCA-VIII as well as the equations in 35 Ill. Adm. Code 620, Subpart F may also be required to generate some of the input values for equation R12. Note; use 35 Ill. Code 620, Subpart F to calculate cleanup objectives for noncarcinogens. Since values listed in RBCA-XIII are used in this evaluation, this datasheet must be submitted. In cases where the target cancer risk (TR) exceeds 1 in 1,000,000, Datasheet -VI must also be submitted.

Land Use Scenario: **ALL**

Institutional Control YES NO

Engineered Barrier YES NO

GWsource (mg/L)	See below	X (cm)	8,230.00
LFsw [(mg/L)/(mg/kg)]*	See below	αx (cm)	823
GWcomp (mg/L)**	See below	αy (cm)	274
C(x)/Csource (unitless)***	See below	αz (cm)	41
U (cm/d)	2.2500	Sw (cm)	1,829
K (cm/d)	209.951	λ (1/d)****	See below
i (cm/cm	0.0030	Sd (cm)	200
θT (cm³/cm³-soil)*****	0.28		

* LFsw reported on Datasheet RBCA-XIII

** GWcomp reported on Datasheet RBCA-VI

*** C(x)/Csource reported on Datsheet RBCA-VI

**** Chemical Parameters (see Datasheet C)

***** Physical Soil Parameters (see Datasheet B)

Chemical Name	GWsource (mg/L)	LFsw (mg/L)/(mg/kg)	GWcomp (mg/L)	C(x)/Csource (unitless)	λ (1/day)	Soil Cleanup Objective (mg/kg)
Vinyl chloride	0.0277	1.63E-01	0.002	7.21E-02	0.000240	0.170

Datasheet RBCA-VII. Concentration of Contaminant in Groundwater Source

Datasheet RBCA-VII is to be used to predict the groundwater concentration at a specified distance from the source as calculated by the equation in Appendix C of TACO: Equation R26 (residential, industrial/ commercial and construction worker scenarios). Since values listed in Datasheet RBCA-V are used in this evaluation, this datasheet must also be submitted.

Csource (mg/L)	See below	αy (cm)	274
X (cm)	8,230.00	Sd (cm)	200
αx (cm)*	823	αz (cm)	41
λ (1/day)***	See below	K (cm/d)	209.95
U (cm/d)*	2.25	i (unitless)	0.003
Sw (cm)	1,829	θT (unitless)**	0.28

* αx, αy, αz, and U are reported on Datasheet RBCA-V ** Physical Soil Parameter (see Datasheet B)
*** Chemical Properties (see Datasheet C)

Chemical Name	λ (1/day)	Csource* (mg/L)	C(x) (mg/L)
Vinyl chloride	0.0002400	0.00000	0.00E+00

* Note: Csource is the measured concentration at the source for this form.

Datasheet Rf - RBCA Retardation Factors

Datasheet Rf - RBCARetardation Factors presents the information used to calculate the retardation factors used in RBCA Equations R15 and R26. The Retardation Factors are used to modify the Specific Discharge to better represent the rate at which the contaminant moves through the saturated zone. For further information see: Domenico, P.A. and F. W. Schwartz. "Physical and Chemical Hydrogeology". 2nd Edition. John Wiley & Sons. New York. pg. 377.

ks (gwater/gsoil)*	See below	ρs (g/cm‡)**	1.90
Koc (gwater/gsoil)*	See below	foc (unitless)**	0.008
η Total Porosity**	0.28		

* ks value reported on Datasheet RBCA-XI ** Physical Soil Properties (see Datasheet B)
***Chemical Properties (see Datasheet C)

Chemical Name	Koc - Subsurface (gwater/gsoil)	ks (gwater/gsoil)	Rf (mg/Lwater)/(mg/kgsoil)
Vinyl chloride	18.60	0.1488	2.01

Clayton GROUP SERVICES

ATTACHMENT F

TOLUENE INFORMATION

TOLUENE

LEACHING FACTOR DATASHEETS

Datasheet RBCA-XIII. LFsw

Datasheet RBCA-XIII is to be used to propose the leaching factor calculated by the equation in Appendix C, Table C of TACO: Equation R14 (residential, industrial/commercial and constructin worker scenarios). The use of Equations R20 and R24 in TACO are necessary to generate some of the input values for Equation R14. Since the values in Datasheet RBCA-XI are used in this evaluation, this Datasheet must also be submitted.

ks (gwater/gsoil)*	See below	ρs (g/cm‡)**	1.72
H' (unitless)***	See below	θws (unitless)**	0.35
Ugw (cm/yr)****	229.90	θas (unitless)**	0.03
K (cm/yr)	76,632.00		
i (unitless)	0.003		
δgw (cm)	200		
I (cm/yr)	7		
W (cm)	1,524		

* ks value reported on Datasheet RBCA-XI ** Physical Soil Properties (see Datasheet B)
Chemical Properties (see Datasheet C) * Ugw value as calculated using Equation R24

Chemical Name	ks (gwater/gsoil)	H' (unitless)	LFsw (mg/Lwater)/(mg/kgsoil)
Toluene	1.2740	2.72E-001	3.37E-02

Datasheet RBCA-XI. ks

Datasheet RBCA-XI is to be used to propose the soil water sorption coefficient (ks) calculated by the equation in Appendix C, Table C of TACO: Equation R20 (residential, industrial/commercial and construction worker scenarios).

Land Use Scenario: **Residential, Industrial/Commercial and Construction Worker**

Chemical Name	Surface Soils				Subsurface Soils			
	pH	Koc* (cm³/g)	foc** (g/g)	ks (g/g$_{soil}$)/(g/cm³$_{water}$)	pH	Koc* (cm³/g)	foc** (g/g)	ks (g/g$_{soil}$)/(g/cm³$_{water}$)
Toluene	6.80	1.82E+002	0.006	1.09200	6.80	1.82E+002	0.007	1.27400

* Chemical Properties (see Datasheet C)

** Physical Soil Parameters (see Datasheet B)

Datasheet E: Soil Saturation Limits

Chemical	Constituent Properties					Saturation Limits	
	Solubility mg/L	Kd (Surface) cm³/g	Kd (Subsurface) cm³/g	Henry's Law Constant (H') (dimensionless)	Organic Carbon Partition Coefficient (Koc)	Csat (Surface Soils) mg/kg	Csat (Subsurface Soils) mg/kg
Toluene	5.26E+002	1.092	1.274	2.72E-001	1.82E+002	653.70	780.24

TOLUENE

GW_{source} DATASHEETS
FORMER FILL PIPE AREA

15-65263ca241

Datasheet RBCA-V. Migration to Ground Water - Class 1

Datasheet RBCA-V is to be used to propose soil cleanup objectives for the migration to ground water exposure route calculated by the equation in Appendix C, Table C of TACO: Equation R12 (residential, industrial/commercial and construction worker scenarios). Equations described under RBCA-VI and RBCA-VIII as well as the equations in 35 Ill. Adm. Code 620, Subpart F may also be required to generate some of the input values for equation R12. Note; use 35 Ill. Code 620, Subpart F to calculate cleanup objectives for noncarcinogens. Since values listed in RBCA-XIII are used in this evaluation, this datasheet must be submitted. In cases where the target cancer risk (TR) exceeds 1 in 1,000,000, Datasheet -VI must also be submitted.

Land Use Scenario: **ALL**

Institutional Control YES NO

Engineered Barrier YES NO

GWsource (mg/L)	See below	X (cm)	18,593.00
LFsw [(mg/L)/(mg/kg)]*	See below	αx (cm)	1,859
GWcomp (mg/L)**	See below	αy (cm)	620
C(x)/Csource (unitless)***	See below	αz (cm)	93
U (cm/d)	2.2500	Sw (cm)	1,128
K (cm/d)	209.951	λ (1/d)****	See below
i (cm/cm	0.0030	Sd (cm)	200
θT (cm³/cm³-soil)*****	0.28		

* LFsw reported on Datasheet RBCA-XIII ** GWcomp reported on Datasheet RBCA-VI

*** C(x)/Csource reported on Datsheet RBCA-VI **** Chemical Parameters (see Datasheet C)

***** Physical Soil Parameters (see Datasheet B)

Chemical Name	GWsource (mg/L)	LFsw (mg/L)/(mg/kg)	GWcomp (mg/L)	C(x)/Csource (unitless)	λ (1/day)	Soil Cleanup Objective (mg/kg)
Toluene	526.000	9.49E-02	1	7.91E-43	0.011000	812.738

Datasheet RBCA-VII. Concentration of Contaminant in Groundwater Source

Datasheet RBCA-VII is to be used to predict the groundwater concentration at a specified distance from the source as calculated by the equation in Appendix C of TACO: Equation R26 (residential, industrial/ commercial and construction worker scenarios). Since values listed in Datasheet RBCA-V are used in this evaluation, this datasheet must also be submitted.

Csource (mg/L)	See below	αy (cm)	620
X (cm)	18,593.00	Sd (cm)	200
αx (cm)*	1,859	αz (cm)	93
λ (1/day)***	See below	K (cm/d)	209.95
U (cm/d)*	2.25	i (unitless)	0.003
Sw (cm)	1,128	θT (unitless)**	0.28

* αx, αy, αz, and U are reported on Datasheet RBCA-V ** Physical Soil Parameter (see Datasheet B)
*** Chemical Properties (see Datasheet C)

Chemical Name	λ (1/day)	Csource* (mg/L)	C(x) (mg/L)
Toluene	0.0110000	0.00000	0.00E+00

* Note: Csource is the measured concentration at the source for this form.

Datasheet C: Chemical Properties

Chemical	Solubility in Water (S) (mg/L)	Diffusivity in Air (Di) (cm^2/s)	Diffusivity in Water (Dw) (cm^2/s)	Henry's Law Constant (H' @ 25°C)	Organic Carbon Partition Coefficient (Koc - L/kg)	First Order Decay Constant (λ - 1/day)
Toluene	5.26E+002	8.70E-002	8.60E-006	2.72E-001	1.82E+002	0.011000

Datasheet Rf - RBCA Retardation Factors

Datasheet Rf - RBCARetardation Factors presents the information used to calculate the retardation factors used in RBCA Equations R15 and R26. The Retardation Factors are used to modify the Specific Discharge to better represent the rate at which the contaminant moves through the saturated zone. For further information see: Domenico, P.A. and F. W. Schwartz. "Physical and Chemical Hydrogeology". 2nd Edition. John Wiley & Sons. New York. pg. 377.

ks (gwater/gsoil)*	See below	ρs (g/cmł)**	1.90
Koc (gwater/gsoil)*	See below	foc (unitless)**	0.008
η Total Porosity**	0.28		

* ks value reported on Datasheet RBCA-XI
** Physical Soil Properties (see Datasheet B)
***Chemical Properties (see Datasheet C)

Chemical Name	Koc - Subsurface (gwater/gsoil)	ks (gwater/gsoil)	Rf (mg/Lwater)/(mg/kgsoil)
Toluene	182.00	1.4560	10.88